

# Turneffe Atoll Marine Reserve

## Lobster Trapping Tenureship Survey



Turneffe Atoll Trust

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## **1.0 Introduction**

### **1.1 Background**

**1.1.1** The Turneffe Atoll was declared a Marine Reserve in November 2012.

**1.1.2** The salient feature of Marine Reserves that set them apart from other Marine Protected Areas is the multiple-use concept. Many other MPA categories in Belize do not make allowances for economic development activities, especially those related to extractive uses. Marine Reserves in general are Fisheries Management Tools that embody a healthy mix of sustainable extractive and non-extractive economic and conservation activities.

**1.1.3** The primary economic activities on Turneffe Atoll are tourism and commercial fishing. Much of the tourism activity is based on sports fishing and scuba diving, while commercial fishing activities are based on the harvesting of a wide range of marine macro-invertebrate and vertebrate species but focusing on Spiny Lobster (*Panulirus argus*) and Queen Conch (*Strombus gigas*).

**1.1.4** The Turneffe Atoll is a collection of over 150 mangrove islands and sand cayes interspersed by an array of lagoons, mud flats, sea grass beds and coral reef formations, The Marine Reserve also encompasses the deep open ocean environment surrounding the atoll. (See Figs. 1 & 2). The range of intertidal and sub-tidal ecosystems provide habitats for a broad range of fin-fish species, macro-invertebrate, marine mammals and aquatic reptiles that are the basis of the recreational tourism industry and commercial fishing enterprises.

**1.1.5** Species of interest to the commercial fishing industry include the macro-invertebrate Spiny Lobster (*Panulirus argus*) and Queen Conch (*Strombus gigas*), as well as fin-fish species such as the yellow-tail snapper (*Ocyurus chrysurus*), Red Snapper (*Lutjanus purpurpeus*), Black Grouper (*Mycteroperca bonaci*), White Grunt (*Haemulon plumieri*) and the Crevalle Jack (*Caranx hippos*).

**1.1.6** The financial worth of the tourism industry in 2010 on Turneffe was estimated at Bz\$47 million per annum with a substantial portion coming from Sports Fishing, while the Commercial Fishing Industry has been estimated at Bz\$6 Million per annum.

**1.1.7** The direct employment associated with the tourism industry in 2010 was estimated at 55 while that attributable to commercial fishing was estimated at 180 – 200 fishermen. The latter is comprised mainly of small scale artisanal fishers whom are divided between semi-resident ‘camp fishermen’ and ‘transient sailboat fishers’. The majority of fishers are the semi-resident camp fishers who hail mainly from Belize City and its immediate suburban environs. Most of the sailboat fishers are from the northern villages of Chunox, Sarteneja and Copper Bank.

**1.1.8** The most valuable and important commercial fisheries of the Turneffe Atoll are the lobster and conch stocks. The target habitats for these species include the various patch reef systems on the atoll, as well as shallow fore-reef and lagoonal systems (See Fig. 1). The latter habitat is especially important to the lobster fishery.

**1.1.9** The lobster and conch fisheries have been historically heavily targeted nationally and are said to be 'mature fisheries'. In the case of the Turneffe Fishery for these species data available from the Fisheries Department in 2009 shows that these stocks are in varying state of decline. In the case of the lobster fishery at Turneffe, there was a decline in annual sales from 20.4 % of national deliveries in 2004 to 6.2% in 2009 – in the case of the conch fishery, the decline was estimated at approximately 60% over said timeframe.

**1.1.10** Apart from over-harvesting and the poaching of under-sized lobster and conch, the decline of these fisheries has also been attributed to habitat destruction and degradation. The latter has been linked to both developmental activities on the atoll and the global phenomena of Climate Change and Climate Variability.

**1.1.11** Recognition of the need to improve the management of developmental activities to conserve the biodiversity of Turneffe Atoll derives from both the Private Sector/NGO Community and the Public Sector. In the case of the Private Sector/NGO Community, Turneffe Atoll Trust (TAT) has dedicated considerable financial resources, time and effort to highlight the perils of unsustainable development and the need to effectively steward the resources and developmental activities on the atoll. The functional efforts of TAT have translated into a sustained effort to monitor and engage pertinent GOB regulatory agencies in regards to unauthorized dredging, illegal mangrove clearing and destructive construction activities. The programmatic efforts of TAT have extended to monitoring and reporting upon illegal fishing activities: This has entailed coordination and material support for the Fisheries Department enforcement activities.

**1.1.12** The Public Sector initiative to improve the sustainable stewardship of Turneffe derives from two (2) sources. These include the Coastal Zone Management Authority Coastal Planning Area Initiative, and the Fisheries Department, which assisted efforts to declare the entire atoll as a Marine Reserve. In relation to the CZMA planning initiative, the Turneffe Atoll was identified as one (1) of nine (9) Planning Zones covering the coastal seas of Belize.

**1.1.13** The zoning scheme associated with Marine Reserves (See Fig. 4), makes allowance for the full suite of development activities on the atoll, and the need to balance these activities with the conservation of biodiversity of the area. Thus, it can be seen from the zonation scheme that there are conservation and preservation zones (See Fig. 4) in which no extractive activities such as dredging or commercial fishing are permitted. Conversely it may also be seen that there is a substantive general use zone (See Fig. 4) where pre-declaration extractive activities will be allowed to continue, all-be-it in a more supervised and closely monitored manner. The special management areas (See Fig. 4) do make allowances for specific and limited fishing activities.

**1.1.24** The commitment to enhance management outcomes for the Turneffe Atoll Marine Reserve is most aptly embodied by two (2) of its management objectives, which reads as follows:

*- Maintain and improve healthy, resilient, biodiverse reefs of the Atoll at or above the 2010 HRI status of 'Fair' up to and beyond 2022*

*- By 2016, reverse the decline in commercial production demonstrated at the Atoll over the last five years by 50%*

**1.1.25** Subsequent to the declaration of the Turneffe Atoll as a Marine Reserve in November 2012, a co-management agreement was signed with the Turneffe Atoll Sustainability Association (TASA) in November 2013. This was a prerequisite for installing a substantive and sustained management presence on the atoll. The most definitive output to date has been the hiring and deployment of rangers to patrol the marine reserve. This, however, has only been recently initiated. Stakeholders are in general most anxious to see a roll-out of the full suite of management activities that would accompany the proper running of the marine reserve. This would include perhaps most significantly beneficiaries such as the fishermen of the atoll.

## **1.2 Project Purpose**

**1.2.1** To determine the location of fishing camps in Turneffe and to assess the zones utilized by fishers to set their lobster traps and 'shades' or 'sumbras'.

**1.2.2** This project is, by inference, focused exclusively on the portion of the lobster fishery that utilizes passive gear. It needs to be borne in mind that using traps and 'shades' is not the only methods used for lobster harvesting: Free diving is also one of the significant methods of capture for the species. Capture methods other than traps and shades were not evaluated in this survey.

**1.2.3** This survey also yields information on whether or not there have been any changes in regard to the number and location of fishing camps on the atoll in recent times. Much of the information related to this issue was reported upon in 2010 and since then there may well have been some changes.

**1.2.4** Given the fairly recent declaration of the Atoll as a Marine Reserve, gauging the attitude of fishers to the relevance of the MPA is also a logical output of the survey.

## **1.3 Project Rationale and Justification**

**1.3.1** If the lobster stocks of the Atoll are to be spared the ravages of overharvesting, as well as habitat destruction and degradation, then management intervention for the fishery will need to focus on the geographic spread of fishing activities and the quantum of production over time. Management interventions will also need to be focused on the fishing methods being deployed and the returns on effort - or catch per unit effort (CPUE).

**1.3.2** Determination of the geographic locations of fishing activities, and indeed CPUE and annual production data, are not only relevant to the assessment of stock size, but may also identify potential conflicts between user groups, such as fishers vs. tourism, or among fishers themselves. The geographic location of fishing activities is also relevant in providing a baseline for other management interventions.

such as managed access initiatives which are to be rolled out nationally throughout all of the Marine Reserves, including the Turneffe Marine Reserve

## **2.0 Methodology**

### **2.1 Geographic Coverage**

**2.1.1** The current survey is relevant to those fishers whom have a significant presence and/or impact on the resources of the Turneffe Atoll. Given the definitive focus of the survey on the deployment of passive or 'set gear' to harvest lobster, the survey efforts are limited to the shallow-water habitat of the atoll. This especially entails the waters of Southern and Central Lagoons of the Atoll (See 'shallow water lagoon' Fig. 1), as well as Vincent's Lagoon (See Zone III Fig. 4). The effort also documented fishing activities in the large open area North of Vincent's Lagoon as well as the barrier lagoon circumnavigating the Atoll between the reef flat and the line of cayes (See 'shallow lagoon' Fig. 1).

**2.1.2** The fore-reef slope and seaward deeper water habitat of the Atoll (See 'Caribbean Open Sea' Fig. 2) were excluded from the survey. This is due to the fact that these areas are not pertinent to trap setting activities for lobster.

**2.1.3** The conservation Zones I, IIA, IV, V & VI (See Fig. 4) were also excluded from the survey given the fact that these areas are off-limits for any lobster harvesting activities. The Special Management Area IIB and the Preservation Zone VII (See Fig. 4) are also excluded from the survey given the non-extractive strictures on these areas.

### **2.2 Survey Design**

**2.2.1** The survey exclusively targeted semi-resident and resident Camp-Fishers who utilize Turneffe for lobster fishing using passive gears. These include lobster traps and 'lobster shades' or 'sumbras'. The latter are in effect Fish Aggregating Devices (FADs) which primarily attracts lobsters.

**2.2.2** Apart from the classical palmetto slot lobster traps, 'drum' which are deployed by some fishers are also considered as traps for the purpose of this survey. These 'drum' are for the most part 55 gallon galvanized drums previously used as containers for gasoline and other petroleum products.

**2.2.3** The survey is a census of issues related to land and seafloor usage on the atoll. Corollary issues such as the status of lobster resources, critical challenges to the fishery and attitudes to the concept of the area being declared as a Marine Reserve were also included in the survey (See Appendix I).

**2.2.4** The sail-boat lobster fishers and day-trippers were excluded from the survey given the transient nature of their fishing activities and the lack of any land or seafloor tenure as they fish the entire atoll primarily by diving and do not fish with set fishing apparatus such as traps or shades.

**2.2.5** The survey was in the form of a questionnaire (See Appendix I). Great care was taken in ensuring that the questions were succinct and clear and that the response required brief verbiage. Great care was also exercised in ensuring that the individual carrying out the survey was trusted and respected by the fishers since this could greatly affect the accuracy and quality of the response garnered.

**2.2.6** The individual selected to carry out the survey was Mr. Dale Fairweather. Mr. Fairweather has been a Camp Fisher on Turneffe for the past twenty-five (25) years. He has excellent rapport with the Fishers and is extremely knowledgeable about the lobster fishery on the atoll. Mr. Fairweather is well respected by the Fishing Community nationally and in this regard is a member of the Managing Committee of the Belize Fishers Federation (BFF).

## **2.3 Project Activities**

**2.3.1** The Customary Lobster Tenureship Survey has been divided into three (3) main phases, viz:

- Problem analysis and survey design
- On-site field survey
- Data analysis and report synthesis

**2.3.2** The overall exercise has taken seven (7) weeks: Two (2) weeks were dedicated to the problem analysis and survey design aspect of the exercise, while three (3) weeks were dedicated to the on-site field survey – the data analysis and report synthesis took two (2) weeks.

**2.3.3** The importance of ensuring that the interviewees were on site is that there was the need for fishermen to specifically pin-point the location of their camps and the full extent of their trap-setting zones.

**2.3.4** The field survey entailed the interviewer presenting the survey form to the interviewee and ensuring that they specifically answered all, or as many of the questions as possible. There were no financial incentives or inducements otherwise to recruit responders to the survey.

## **3.0 Observations, Results and Discussion**

### **3.1 Observations**

**3.1.1** Thirty-three (33) out of a possible thirty-four (34) persons responded to the survey – this represented a ninety-seven percent (97%) response rate. The only person that did not participate in the survey pointedly stated that he did not wish to be involved in the exercise. All responders to the survey did so willingly and for the most part enthusiastically. The survey was conducted during the fishing season for lobster to ensure that most of the potential responders would be on-site.

## **3.2 Results and Discussion**

**3.2.1** There were thirty-one (31) Fishing Camps identified in the survey. This was an increase over the twenty-five (25) camps identified by Cawich in a 2010 survey (See Figs 3A & 3B).

**3.2.2** Most of the Fishing Camps were located around the periphery of Southern and Central Lagoons of the atoll (See Fig. 3B). These camps are located within the General use Zone of the Marine Reserve (See Fig. 4). There were also a few camps on the seaward margins of the lands surrounding Southern Lagoon and Central Lagoons (See Fig. 3B and Appendix III).

**3.2.3** Twenty-one (21) of the thirty-three (33) fishers chose to volunteer information on their preference for fishing gear deployed in the lobster fishery at Turneffe. There was a functional split on those fishers using 'Lobster Shades' or 'Sumbras' vs. those using 'Lobster Shades' in combination with Lobster Traps – none of the fishers used Lobster Traps alone (See Table 1). Our supposition is that this is a function of the efficiency of the 'Sumbras' to attract lobsters, their relatively low construction/acquisition costs, and the need to optimize opportunities for capture of the target species using multiple harvesting strategies.

**3.2.4** Seventy-eight percent (78%) of the fishers were long-term residents of the atoll (See Table 2) - these are individuals with more than eleven (11) years in the area (See Appendix I). The longest term resident has fished at Turneffe for fifty (50) years (See Table 2). There are a significant number of residents with tenureship of over thirty (30) years on the atoll (See Table 2). The average mean time of tenureship was 22.5 years, while the median was 20 years and the mode was also 20 years (See Table 2).

**3.2.5** The medium and short-term Camp Fishers on the Atoll were evenly split at eleven percent (See Table 3). The short-term residents were those individuals with a presence of 1 to 3 years, while medium-term residents had tenure of 4 to 10 years (See Table 3).

**3.2.6** Fishers with 'free-hold' or 'private' ownership of their land parcels were in the minority – they made up only 23% of the respondents (See Table 3). The Lease Holders were a total of 29%. The majority of responders were classified in the 'Other' Category of the survey – these fishers made up 48% of those polled (See Table 3). This included for the most part fishers that had some form of 'Tennant' arrangement with the primary owners of the camp. It also included individuals who were working for the primary camp owners and those individuals who had no declared arrangement with the owner who were in effect 'squatting'. In one instance an individual had relocated temporarily from his camp with the authorization of the primary owner because his camp had recently burned down.

**3.2.7** The seafloor usage was extensive and took up most of the shallow water habitat of the atoll. In the case of the internal lagoons, viz: Northern Lagoon or Vincent's Lagoon, the Southern Lagoon and the Central Lagoon, 90 – 100% of the seafloor is being utilized.(See Appendix II). The extreme northern waters of the atoll had an appreciable quantum of space that was not utilized for trap setting by fishers. These areas are open sea/reef lagoonal areas that are richly invested with patch reef that were generally turbid and not fisher-friendly in terms of locating lobster traps and 'sumbras'. These areas are primarily targeted by sail-boat fishers utilizing free-diving methods of capture.

**3.2.8** There is an appreciable amount of overlap in terms of seafloor customary usage. A number of individuals identified similar zones that were not necessarily mirror images of each other but were reflective of considerable overlap. One instance of major overlap was in regard to different individuals operating from the same camp but working independently. This was seen in 'Fishing Area III' with Daniel Palacio, Nicholas Diego and Frank Andrews (See FA. III, Fig. 3C). Daniel Palacio or 'Cappy' is the primary owner of the Camp and Frank Andrews and Nicholas Diego were camping there. These individuals fish a sizable area of the lower central and south-eastern reaches of Southern Lagoon (See Appendix II).

**3.2.9** The more common cases of the overlap of seafloor usage are related to individuals located at adjacent camps and fishing areas with major overlap. This was seen in Vincent's Lagoon with Dale Fairweather, Kent Gillette, Leavan Aldana and Eric Young (See FA. I, Fig. 3C and Appendix II). Other cases of major overlap were also seen in the Central Lagoon: This entailed Fishing Areas II, III, IV and V (See Fig. 3C). The greatest overlap was in Fishing Area III and involved Angel Marin, Alan Bevans Green, Dale Fairweather, Kent Gillett, Anthony Allen, Wayne Jones and George Marin (See FA. III, Fig. 3C and Appendix II).

**3.2.10** Another case of major overlap in the Central Lagoon entailed Fishing Area V with Hopeton Westby Jr, Octivio Flores, Joseph Tasher, David Flores, Roy Bowden and Daniel Palacio (See FA. V, Fig. 3C and Appendix II).

**3.2.11** The other area of significant overlap was a 'tributary' or 'bogue' off the southeastern portion of the Central Lagoon known as Soldiers Bight and Small Fishing Bogue (See Fig. 3 B and Appendix II): This area is labelled Fishing Area VII on Fig. 3C. The relevant fishers in this instance were Melvin Young, Leopold Young and Hopeton Westby Jr.

**3.2.12** There was also some instances of overlap in the extreme southwestern portion abutting the Southern Lagoon immediately northwest of Caye Bokel (See Fig. 3 B and Appendix II): This area has been labelled as Fishing Area VI on Fig. 3 C. The relevant fishers were Hopeton Westby Jr., Jason Young and William Johnson (See Fig. 3 C).

**3.2.13** It was also apparent from the survey that a number of utilized fishing grounds throughout the Atoll – This included Hopeton Westby Jr., Dale Fairweather and Kent Gillett (See Fig. 3 C).

**3.2.14** It was not clear what arrangement(s) are in place to deal with the potential conflicts arising among fishers with overlapping fishing areas; however, it was pointed out by an informed fisher that the operation of this system was predicated on the marking of 'Set Lines' or demarcation paths to identify the lobster traps and 'Sumbras' set in a particular area. It should be kept in mind that these traps and 'Sumbras' are neither registered nor licensed, thus there is no information on the number of traps and/or 'Sumbras' deployed in the fishery in any public record.

**3.2.15** Most of the fishers feel that the status of the fishery resources and the prospects of fishing are 'fair' (See Table 3). Those who feel that the prospects of fishing are either 'poor' or 'good' was split at 18% (See Table 3).

**3.2.16** The overwhelming majority of Camp Fishers (84%) feel that the most critical need for the fishery on the Atoll is 'more enforcement patrols' (See Table 3). Fishers feel that the second-most critical need for the fishery (11%) is to contain 'fishing during the closed season' (See Table 3).

**3.2.17** Most of the Camp Fishers (68%) feel that the most 'damaging aspect to the lobster fishery' is the 'catching of undersized lobsters (See Table 3). They feel that the second most damaging aspect to the fishery (24%) is pirating traps and shades' (See Table 3).

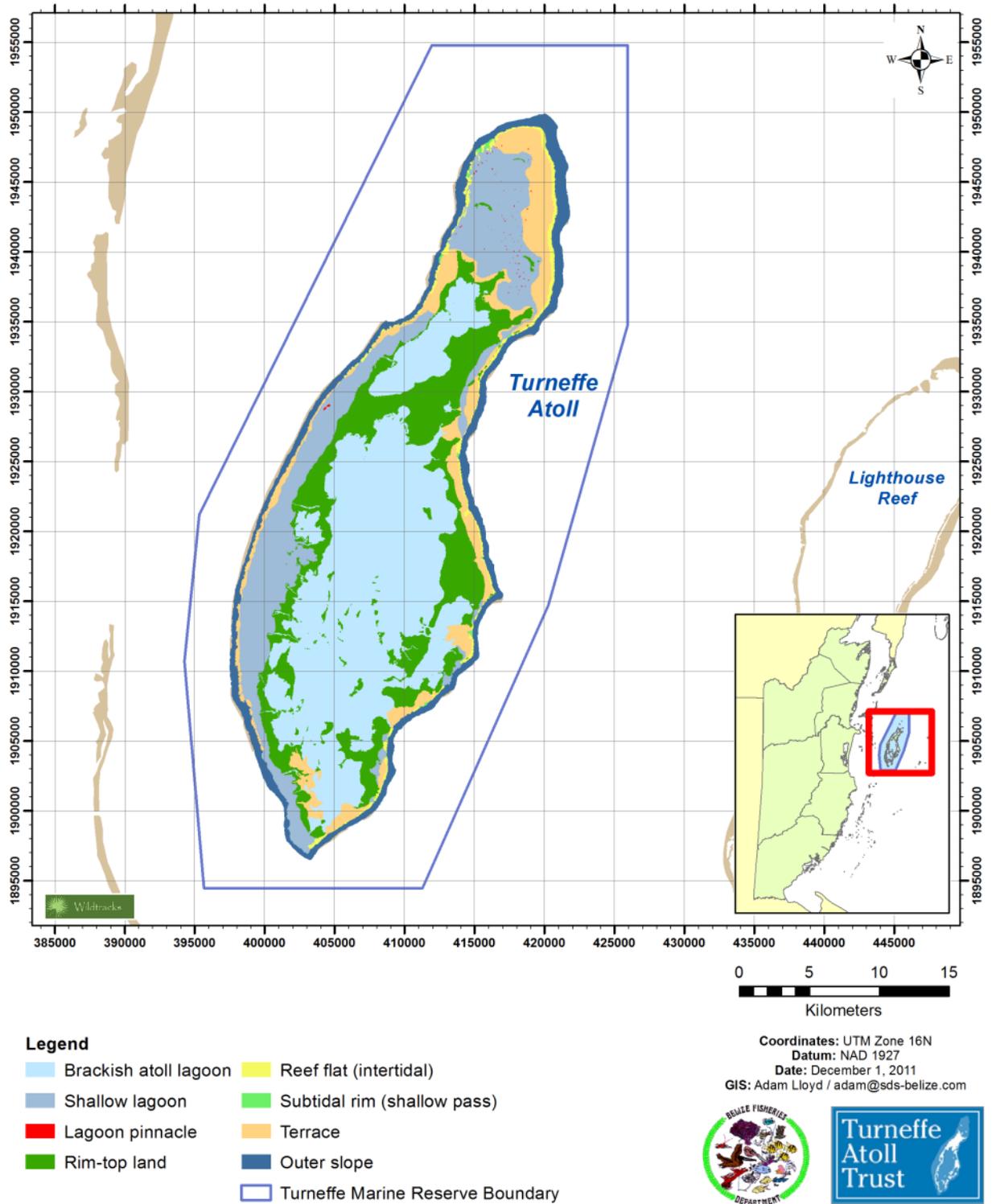
**3.2.18** The overwhelming majority of fishers (85%) supported the concept of the Marine Reserve (See Table 3). Only 3% do not support the concept of the reserve (See Table 3).

**3.2.19** A major 'concern is that 'the rangers display the highest standard of professionalism (See Table 3) .This was the sentiment echoed by 16% (See Table 3). The other concern, also evenly split at 16%, is for 'the various zones of the Marine Reserve to be demarcated to ensure that the areas open for fishing is readily identifiable' (See Table 3). The majority of Camp Fishers (41%) do not have any concerns about the Marine Reserve (See Table 3).

**3.2.20** The vast majority of Camp Fishers (79%) do not feel that the concept of the Marine Reserve had been adequately explained to them (See Table 3).

**3.2.21** The overwhelming majority of Camp Fishers (85%) feel that the Marine Reserve will bode well for their operations (See Table 3).

# Turneffe Atoll: Reef Geomorphology (MAR)



**Fig. 1:** Geomorphology of Turneffe Atoll

# Turneffe Atoll: Ecosystems (UNESCO; after Meerman)

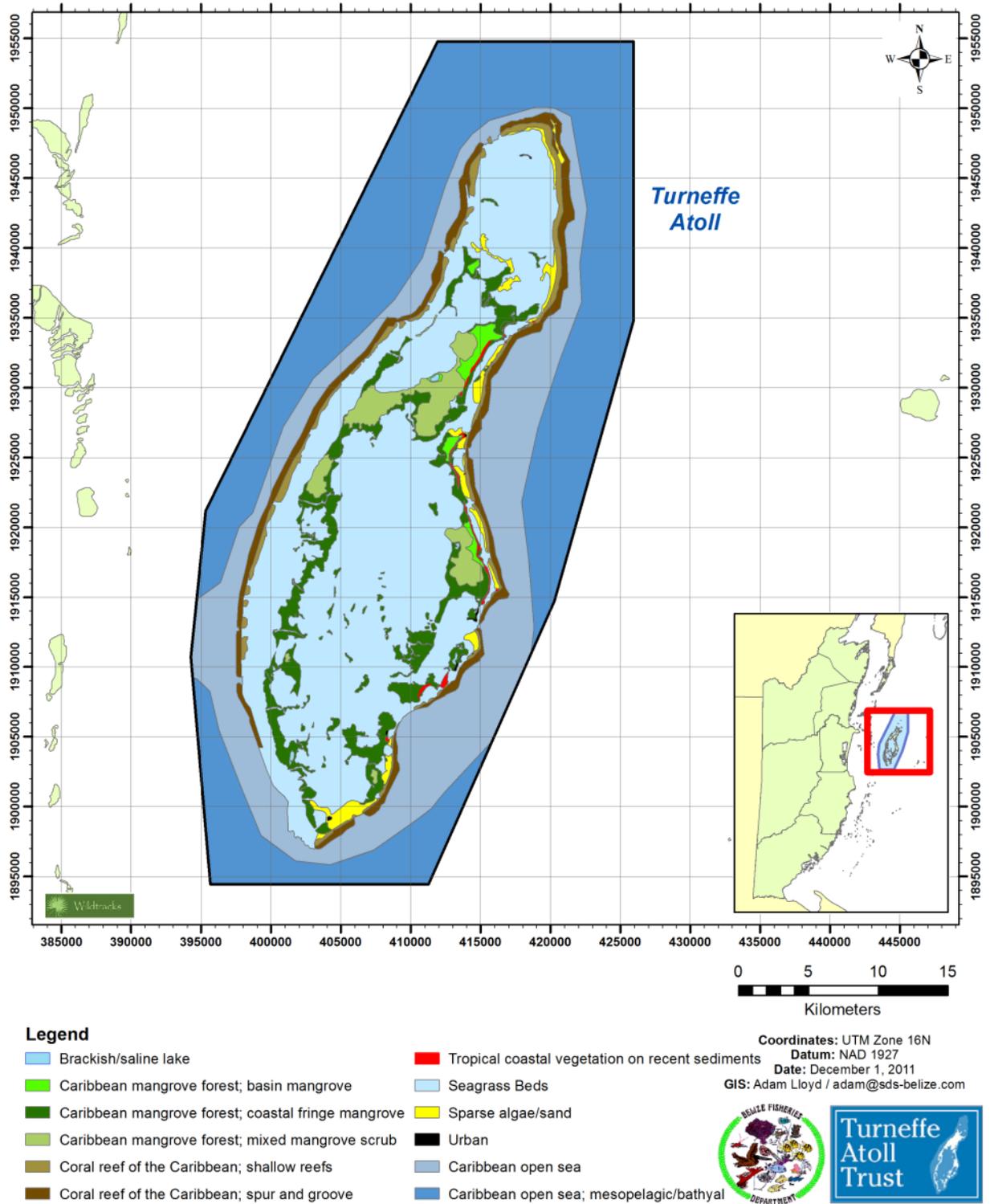


Fig. 2: Ecosystems of Turneffe Atoll

# Turneffe Atoll : Fishing Cam

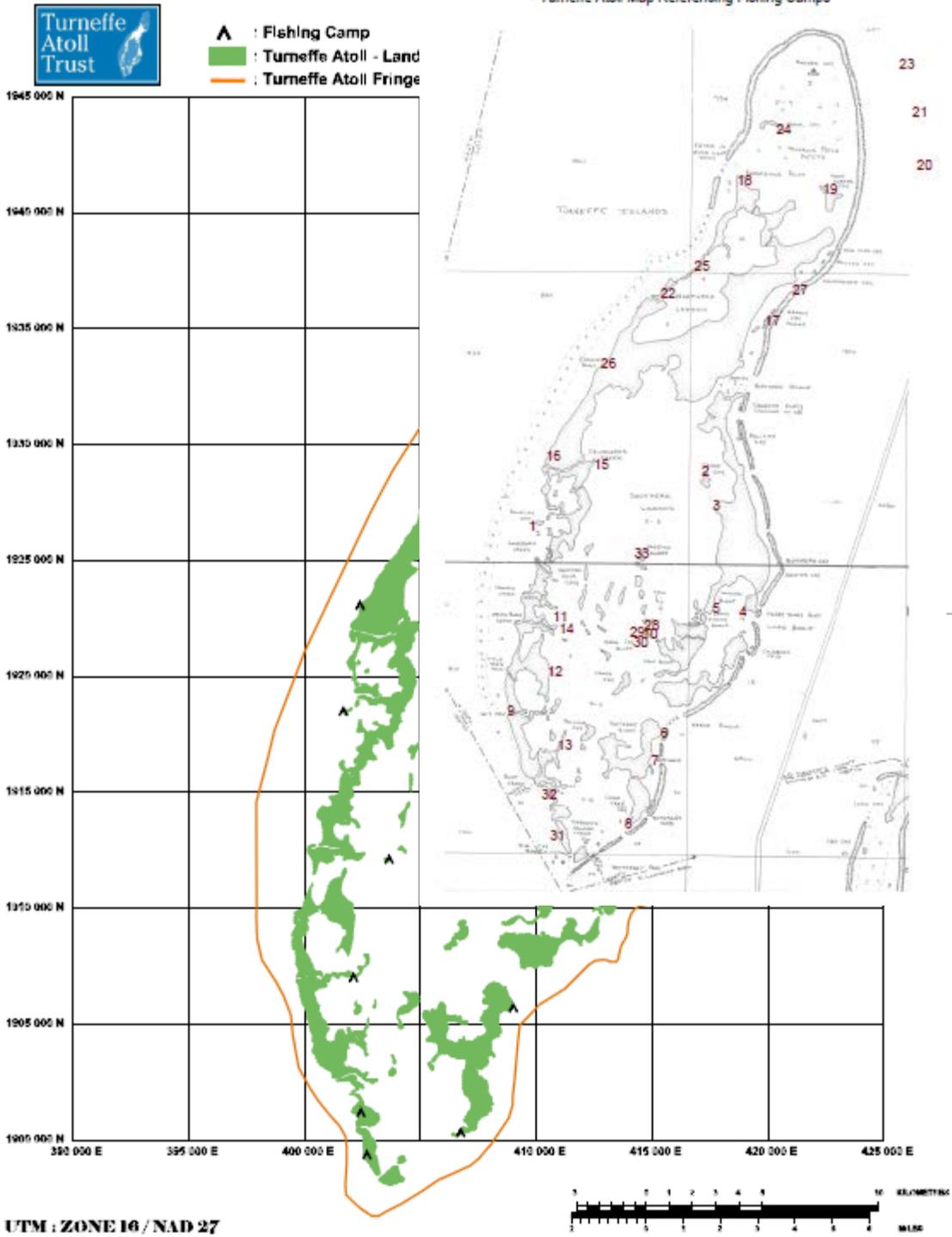


Fig. 3A: Location of Fishing Camps in 2010

Turneffe Atoll Map Referencing Fishing Camps

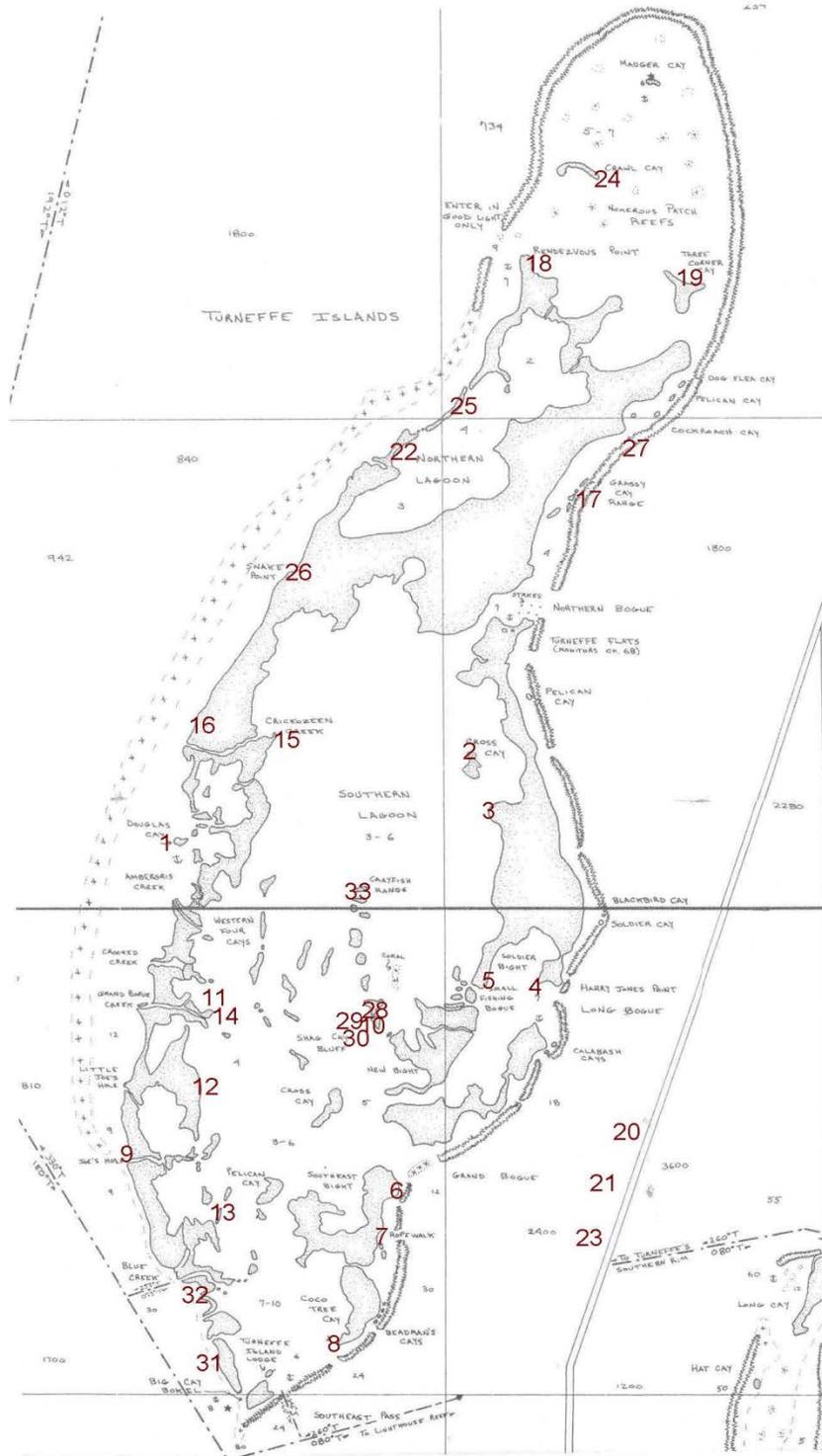
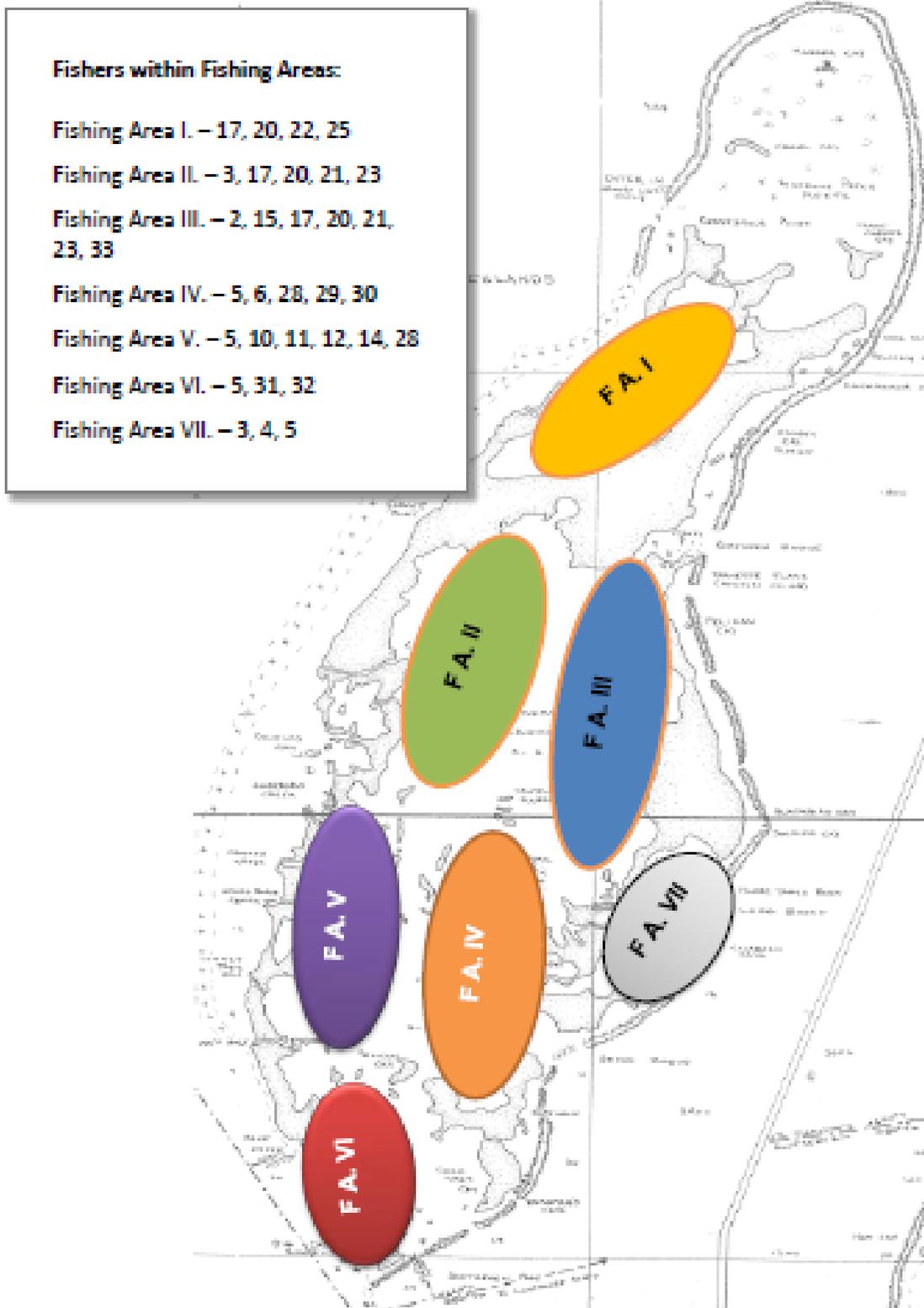


Fig. 3B: Location of Fishing Camps 2014

**Key to Fig. 3B & 3C**

<b>Number on Map</b>	<b>Name of Fisher Occupying Camp</b>
1	Jeffrey Murillo
2	Angel Marin
3	Melvin Young
4	Leopold Young
5	Hopeton Westby Jr & Jermaine Cain
6	David Young
7	Ismael Moreno
8	Fabian Johnson
9	Greg Dillon
10	Octivio Flores
11	Joseph Tasher
12	David Flores
13	Eligio Tzul
14	Roy Bowden
15	Allan Bevans Green
16	Mounthcreef Flowers
17	Dale Fairweather
18	Alfred Barrow
19	Isaac Lambey
20	Kent Gillett
21	Anthony Allen
22	Leavan Aldana
23	Wayne Jones
24	Michael Welch
25	Eric Young
26	Alburn Plunkett
27	Dionicio Edwards
28	Daniel Palacio
29	Nicholas Diego
30	Frank Andrews
31	Jason Young
32	William Johnson
33	George Marin

Figure 3C. Fishing Zone of Overlap – Turneffe Atoll



# Turneffe Atoll: Management Zones

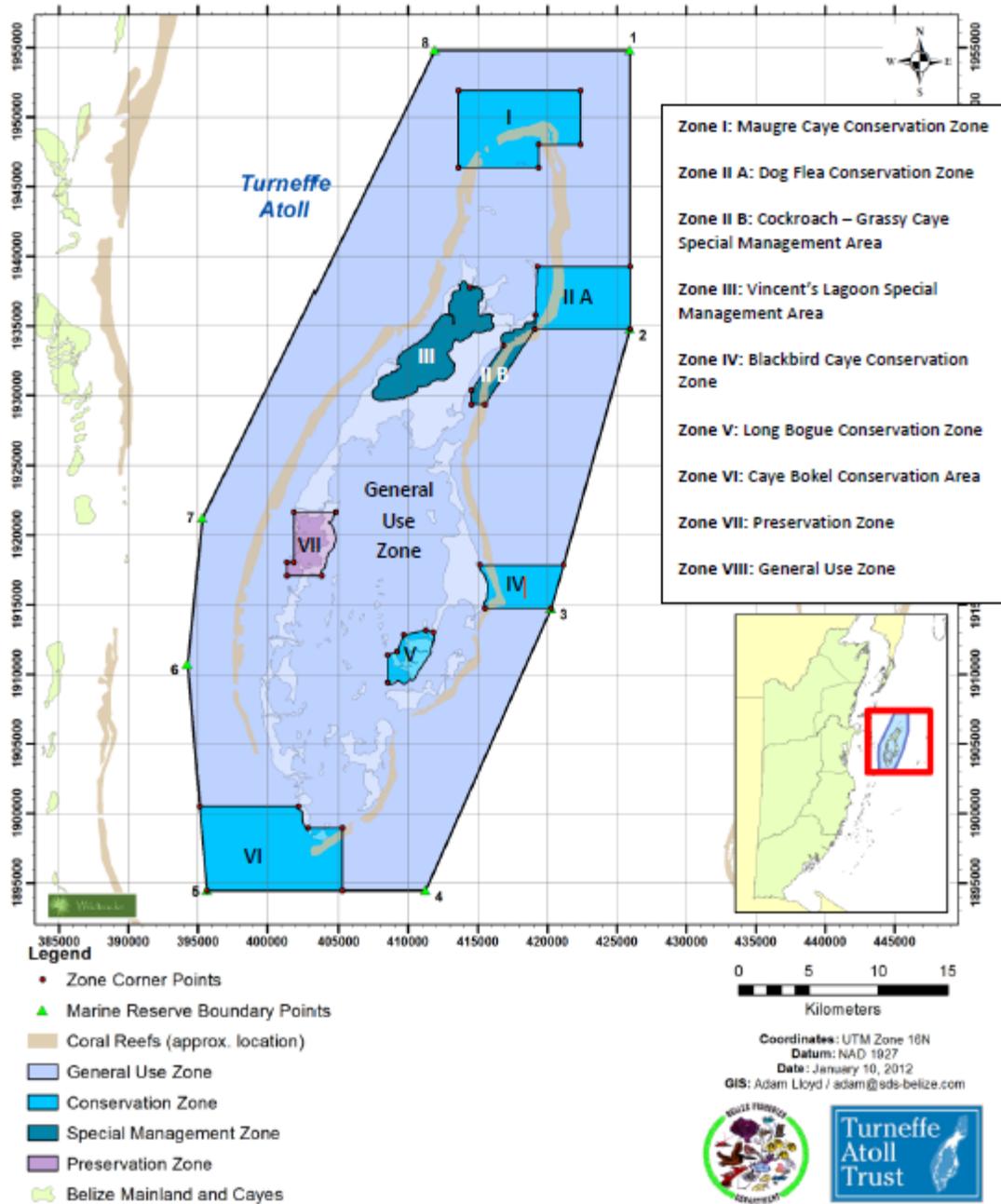


Fig. 4: Turneffe Atoll Marine Reserve Zonation Scheme

**Table 1:** Passive gear fishing method census

<b>Number of Fishers</b>	<b>Fishing Method</b>	<b>Percentage</b>
0	Lobster Trap	-
10	Lobster Shade	48%
11	Lobster Trap & Lobster Shade	52%

**Table 2:** Analysis of tenureship on the atoll

<b>Length of Tenureship</b> (years)	<b>Averages</b>		
	<b>Mean</b> (years)	<b>Median</b> (years)	<b>Mode</b> (years)
32, 4, 34, 30, 29, 20, 27, 26, 14 12, 50, 20, 45, 20, 35, 45, 25, 20 20, 23, 3, 4, 1, 45, 5, 5, 11, 11, 20 1	22.5 yrs	20 yrs	20 yrs

**Table 3:** Summary survey synthesis

Variable	Specific Qualifiers	Quantitative Response (No. Persons)	Percentage Distribution
History Land and Seafloor Tenureship	Long-Term ( ≥ 11 yrs)	21	78%
	Medium-Term (4 – 10 yrs)	3	11%
	Short-Term (1 – 3 yrs)	3	11%
Land Ownership	Private Ownership	7	23%
	Lease	9	29%
	Other	15	48%
Fishing Viability	Poor	6	18%
	Fair	21	64%
	Good	6	18%
Critical Need	More enforcement patrols	31	84%
	Too much sailboat	2	5%
	Fishing during Closed Season	4	11%
Most Damaging aspect to lobster fishery	Pirating traps and shades	9	24%
	Catching under-sized lobsters	26	68%
	Hurricanes	1	3%
	Too many fishers	1	3%
	Dredging	1	3%
Support for Marine Reserve	Yes	28	85%
	No	1	3%
	Maybe	4	12%
Concerns for Marine Reserve	Little or no info available	4	13
	Professionalism of Rangers	5	16%
	Corruption of Enforcement Officers	2	5%
	No Concern	13	41%
	Demarcation of zones open to fishing	5	16%
	No management activities taking place	3	9%
Concept and specific of Marine Reserve explained	Yes	7	21%
	No	27	79%
Will Marine Reserve help?	Yes	29	85%
	No	5	15%

## **4.0 Conclusions**

**4.1.1** Turneffe is important as a destination for the production of lobster in Belize. This may be seen from the high degree of usage of the lagoonal floor of the atoll for the setting of lobster traps and shades.

**4.1.2** Turneffe Atoll Fishers have a long history of utilizing the atoll. The longest recorded tenure was 50 years, with an arithmetic mean of 22.5 years.

**4.1.2** Fishers are very supportive of the Marine Reserve and they link their livelihood with the benefits of a properly functioning Marine Reserve.

**4.1.3** Although fishers generally supported the concept of a Marine Reserve, Fisher does not feel that the operational details of the reserve have been adequately explained to them.

**4.1.4** The overlap of fishing zones is significant, especially in Vincent's Lagoon, the Southern Lagoon and the Central (Main) Lagoon.

**4.1.5** Because of the overlap in fishing areas, the potential for conflict among fishers utilizing the lagoonal floor for lobster trapping activities appears high.

**4.1.6** The information collected in this survey will be helpful in informing fisheries management going forward. This will be particularly pertinent to the Managed Access initiative being implemented across Marine Reserves nationally.

**4.1.7** Fishers felt that the most important challenge to the atoll was the lack of enforcement.

## **5.0 Recommendations**

**5.1.1** Demarcation of the areas of the seafloor used by particular fishers will likely need to be more specifically defined before definitive Fisheries Management Interventions, such as Managed Access, are instituted.

**5.1.2** Given the fact that use of the seafloor by fishers has been a source of social tension and intense rivalry at times leading to violent confrontation and even death, there is the need to critically examine the prospects for legal tenure of the seafloor by fishers. There is also the need to embark on initiatives to invest fishers with the requisite 'conflict resolution' capabilities that would mitigate and avert negative consequences.

**5.1.3** Input of fishers on the need to strengthen enforcement in the Marine Reserve emphasizes the need for the Turneffe Atoll Marine Reserve to develop a fully operational enforcement program as rapidly as possible. Rangers for the Marine Reserve should be meaningfully deployed, especially during the upcoming lobster season, to effectively prevent illegal fishing activities. The goal of enforcement

should be to stop the illegal harvesting of lobsters and conch during the closed seasons as well as the taking of undersized lobster and conch.

**5.1.4** Effective demarcation of the various zones of the Marine Reserves should be instituted so that fishers and the general public are aware of no-take zones. This, along with a fully functional enforcement system, would build confidence and support among fishers for the broader concepts of the Marine Reserves.

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Appendix I

Turneffe Marine Reserve Lobster Trap Zone Survey

January 2014

- 1.0 How long have you had your fish camp? \_\_\_\_\_ Years
- 2.0 Do you own or lease the land where your camp sits? Own \_\_\_\_\_, Lease \_\_\_\_\_, Other \_\_\_\_\_
- 3.0 How do you rate the current lobster fishing at Turneffe? Poor \_\_\_\_, Fair \_\_\_\_, Good \_\_\_\_, Excellent \_\_\_\_\_.
- 4.0 What is the most important need for Turneffe's fishery?
- 5.0 What things are damaging the lobster fishery at Turneffe?
- 6.0 Do you support the new Marine Reserve? Yes \_\_\_\_\_ No \_\_\_\_\_ Maybe \_\_\_\_\_.
- 7.0 What is your biggest concern about the Marine Reserve?
- 8.0 Do you feel that the Marine Reserve has been adequately explained to you?
- 9.0 Do you believe that the Marine Reserve will help your fishing operation? Yes \_\_\_\_\_, No \_\_\_\_\_

Appendix II

Cumulative Survey Narrative and Maps

① Jeffrey Murillo

Turneffe Marine Reserve

Lobster Trap Zone Survey

January 2014

1.0 How long have you had your fish camp?

1 Years

NEW OWNER

NT  
Doelg LAS CAMP  
THERE 40 YRS.

2.0 Do you own or lease the land where your camp sits? Own

Lease

Other

3.0 How do you rate the current lobster fishing at Turneffe? Poor

Fair

Good

Excellent

4.0 What is the most important need for Turneffe's fishery?

GOOD ENFORCEMENT

5.0 What things are damaging the lobster fishery at Turneffe?

~~THE~~ ILLEGAL FISHING

6.0 Do you support the new Marine Reserve? Yes

No

Maybe

7.0 What is your biggest concern about the Marine Reserve?

THAT THE RANGERS DO THERE JOB AND DON'T  
TAKE BRIBE.

8.0 Do you feel that the Marine Reserve has been adequately explained to you?

YES

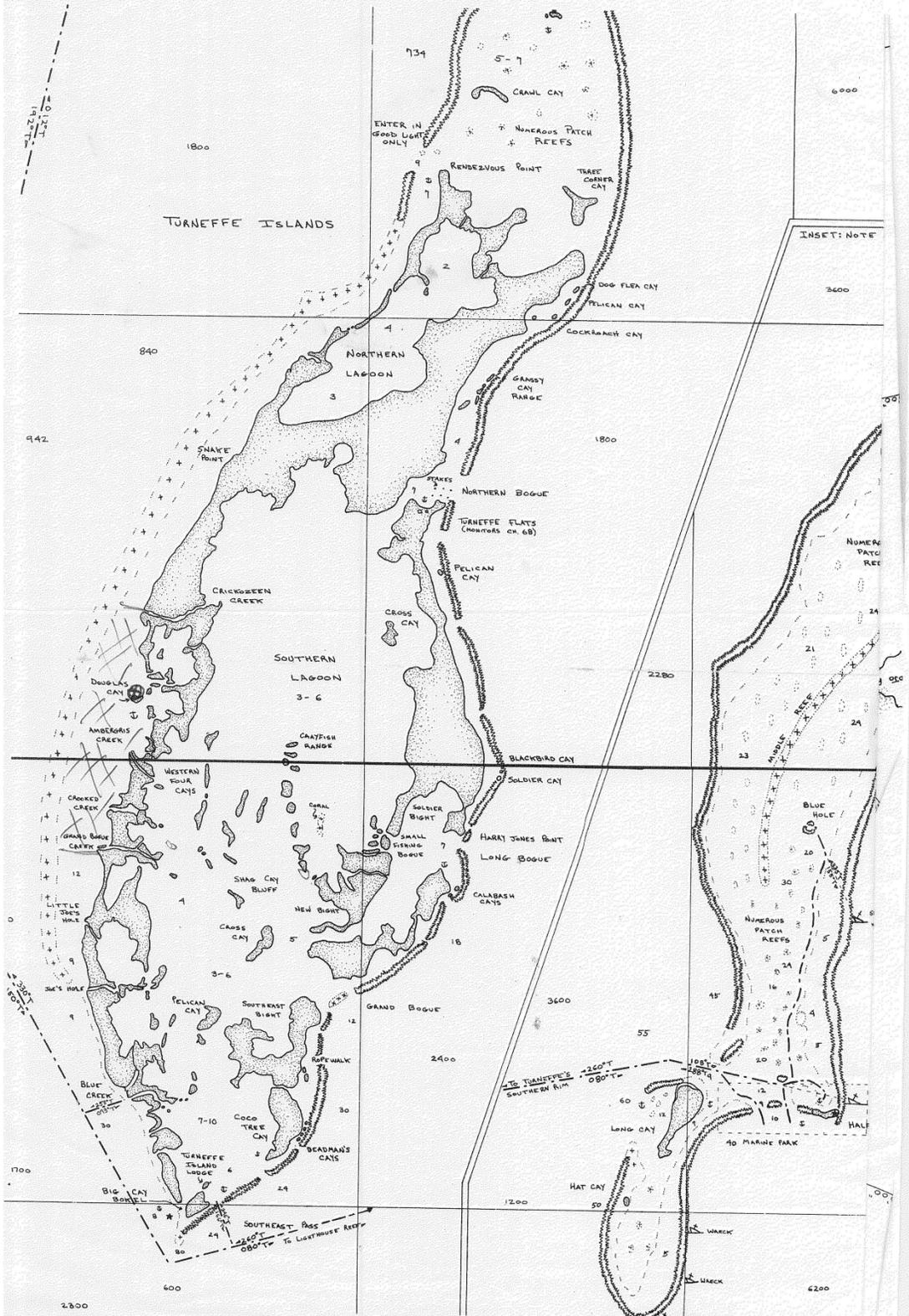
9.0 Do you believe that the Marine Reserve will help your fishing operation? Yes

No

①

JEFFREY MURRILLO

SHADE



2

Angel Marin

Turneffe Marine Reserve

Lobster Trap Zone Survey

January 2014

- 1.0 How long have you had your fish camp? 20 Years
- 2.0 Do you own or lease the land where your camp sits? Own \_\_\_\_\_, Lease \_\_\_\_\_, Other
- 3.0 How do you rate the current lobster fishing at Turneffe? Poor , Fair \_\_\_\_\_, Good \_\_\_\_\_, Excellent \_\_\_\_\_
- 4.0 What is the most important need for Turneffe's fishery?  
NEED PATROLING
- 5.0 What things are damaging the lobster fishery at Turneffe?  
TAKING UNDER SIZE LOBSTER
- 6.0 Do you support the new Marine Reserve? Yes , No \_\_\_\_\_, Maybe \_\_\_\_\_
- 7.0 What is your biggest concern about the Marine Reserve?  
NO INFORMATION WHAT IS A RESERVE
- 8.0 Do you feel that the Marine Reserve has been adequately explained to you?  
NO
- 9.0 Do you believe that the Marine Reserve will help your fishing operation? Yes , No \_\_\_\_\_



③ Melvin Young

Turneffe Marine Reserve

Lobster Trap Zone Survey

January 2014

1.0 How long have you had your fish camp? 10 Years

2.0 Do you own or lease the land where your camp sits? Own  , Lease  , Other

3.0 How do you rate the current lobster fishing at Turneffe? Poor  , Fair  , Good  , Excellent

4.0 What is the most important need for Turneffe's fishery?

CUT DOWN ON THE AMOUNT OF SAILBOAT

5.0 What things are damaging the lobster fishery at Turneffe?

TAKING THE SMALL LOBSTER

6.0 Do you support the new Marine Reserve? Yes  No  Maybe

7.0 What is your biggest concern about the Marine Reserve?

WHAT IS THE INTENSION OF THE RESERVE

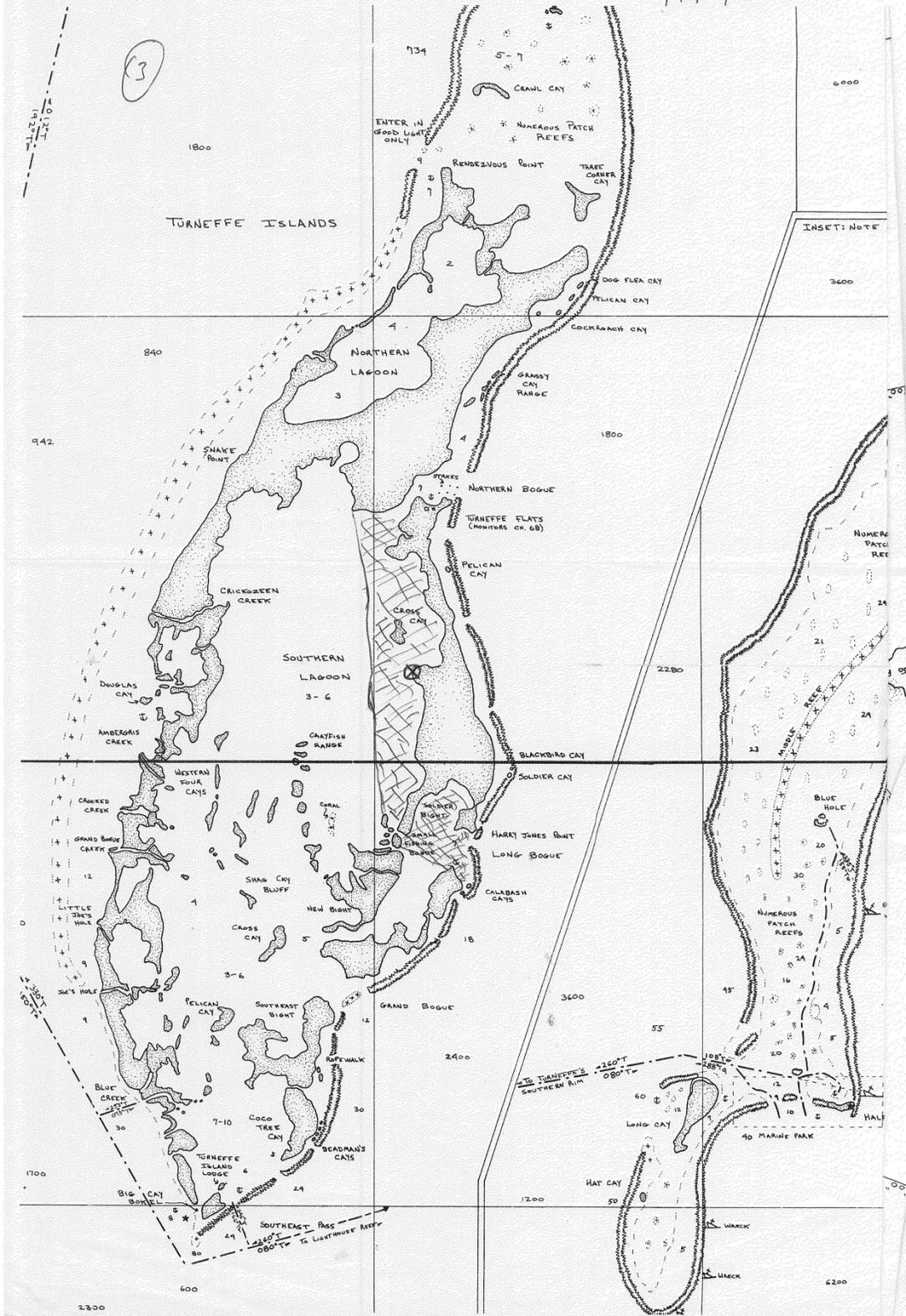
8.0 Do you feel that the Marine Reserve has been adequately explained to you?

NO

9.0 Do you believe that the Marine Reserve will help your fishing operation? Yes  , No

MELVIN YOUNG

TRAPS & SHADE



(4) Leopold Young

Turneffe Marine Reserve

Lobster Trap Zone Survey

January 2014

MELVIN Young

1.0 How long have you had your fish camp? 11 Years CAMP OWN by

2.0 Do you own or lease the land where your camp sits? Own ✓, Lease, Other

3 Excellent FAIR ✓

4.0 What is the most important need for Turneffe's fishery? STOP FISHERS FROM WORKING CLOSE SEASON

5.0 What things are damaging the lobster fishery at Turneffe? HARVESTING SMALL LOBSTER

6.0 Do you support the new Marine Reserve? Yes ✓ No Maybe

7.0 What is your biggest concern about the Marine Reserve? NO CONCERN

8.0 Do you feel that the Marine Reserve has been adequately explained to you? NO

9.0 Do you believe that the Marine Reserve will help your fishing operation? Yes ✓ No

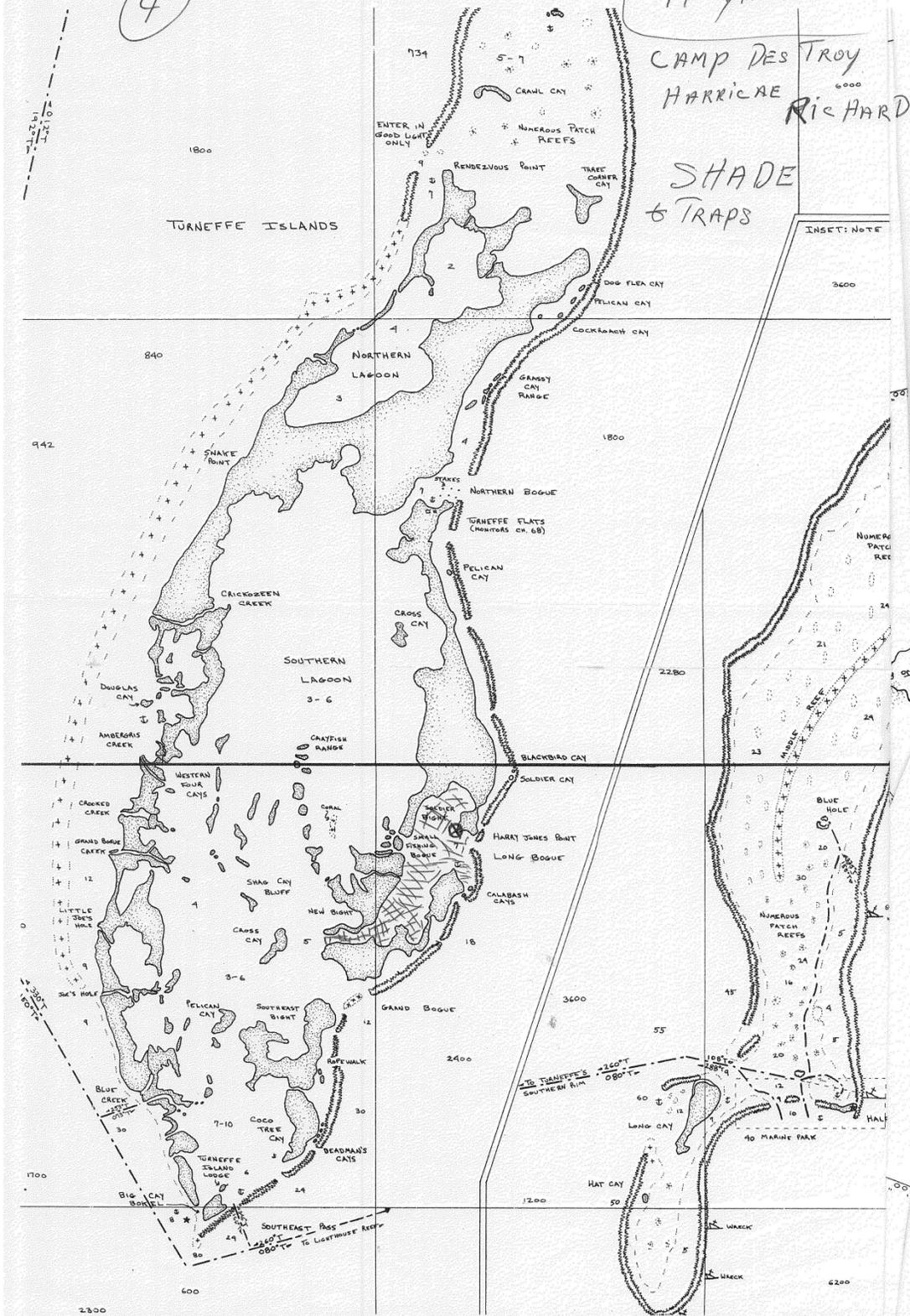
LEOPOLD YOUNG

FISH AREA  
17 YEARS

4

CAMP DESTROY  
HARRICAE  
RICHARD

SHADE  
& TRAPS



⑤ Hopeton Westby Jr.

Jermaine Cain

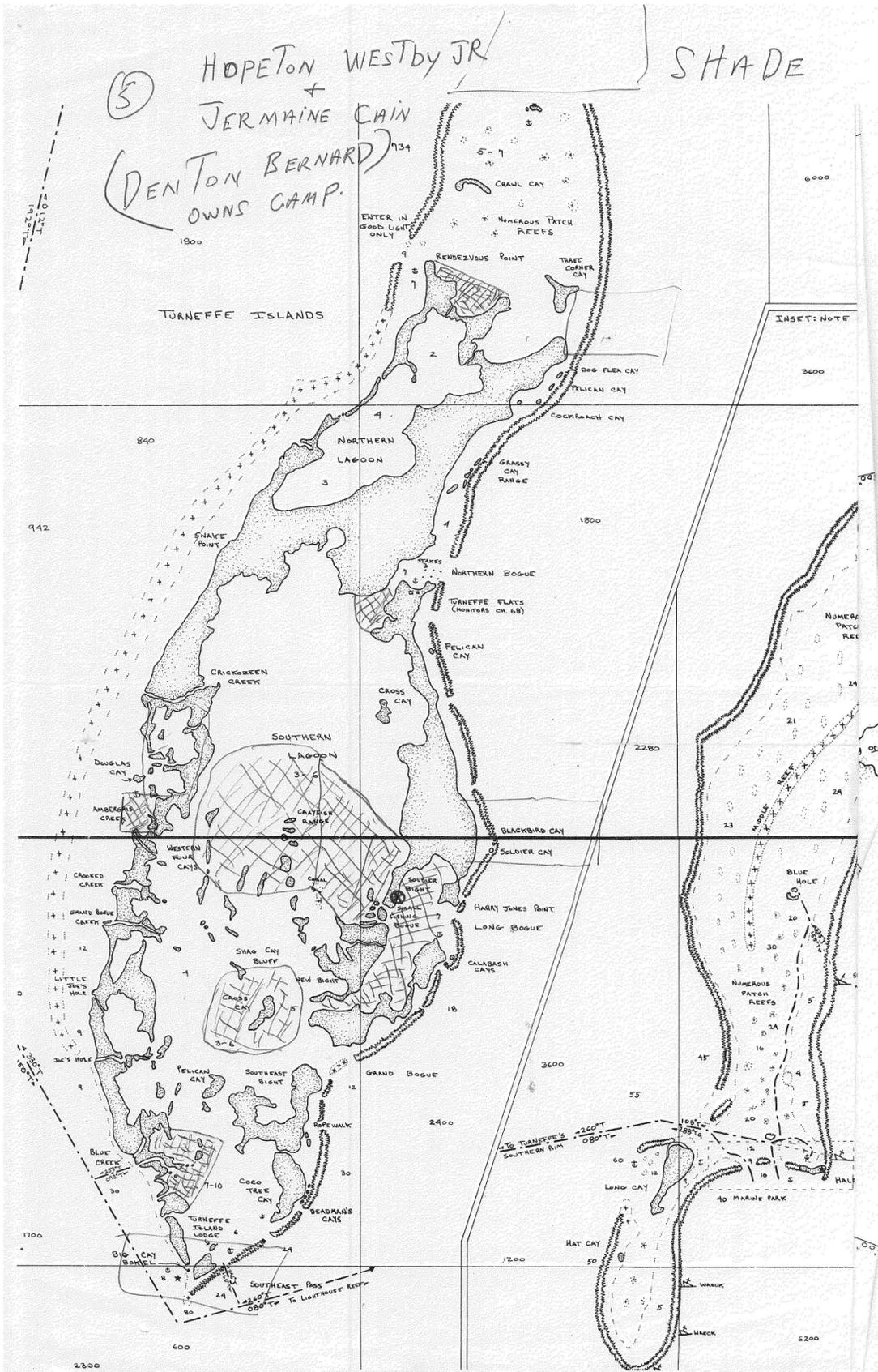
Turneffe Marine Reserve

Lobster Trap Zone Survey

January 2014

- 1.0 How long have you had your fish camp? 5 Years
- 2.0 Do you own or lease the land where your camp sits? Own \_\_\_\_\_, Lease \_\_\_\_\_, Other
- 3 Excellent \_\_\_\_\_ FAIR
- 4.0 What is the most important need for Turneffe's fishery?  
GOOD PATROLING
- 5.0 What things are damaging the lobster fishery at Turneffe?  
TOO MANY PEOPLE THE DIVE THE REEF AND KILL LOBSTER WITH EGGS
- 6.0 Do you support the new Marine Reserve? Yes  No \_\_\_\_\_ Maybe \_\_\_\_\_
- 7.0 What is your biggest concern about the Marine Reserve?  
CANT FISH TRADISTIONAL FISHING GROUNDS FOR FIN FISH
- 8.0 Do you feel that the Marine Reserve has been adequately explained to you?  
NO
- 9.0 Do you believe that the Marine Reserve will help your fishing operation? Yes  No \_\_\_\_\_

N.B. THE OWNER OF IS DENTON BANARD IS EMPLOY OTHERWISE BUT HAS SHADES SET.



⑥ David Young

Turneffe Marine Reserve

Lobster Trap Zone Survey

January 2014

1.0 How long have you had your fish camp? 45 Years

2.0 Do you own or lease the land where your camp sits? Own \_\_\_\_\_, Lease , Other \_\_\_\_\_

3.0 How do you rate the current lobster fishing at Turneffe? Poor \_\_\_\_\_, Fair , Good \_\_\_\_\_, Excellent \_\_\_\_\_.

4.0 What is the most important need for Turneffe's fishery?

PATROLS

5.0 What things are damaging the lobster fishery at Turneffe?

DREDGING IN YOUR AREA & KILLING SMALL LOBSTER

6.0 Do you support the new Marine Reserve? Yes  No \_\_\_\_\_ Maybe \_\_\_\_\_.

7.0 What is your biggest concern about the Marine Reserve?

NO INFORMATION

8.0 Do you feel that the Marine Reserve has been adequately explained to you?

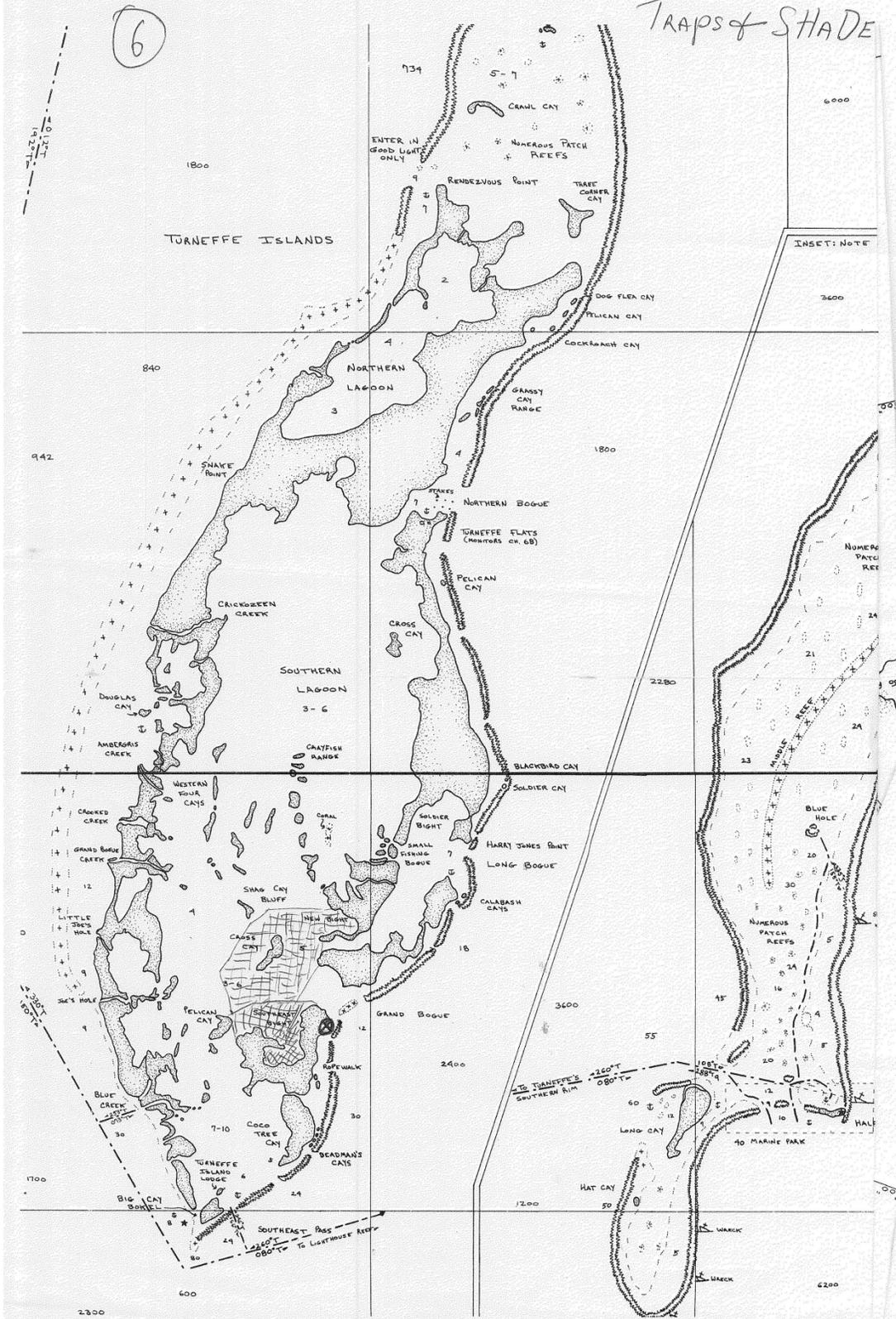
NO

9.0 Do you believe that the Marine Reserve will help your fishing operation? Yes , No \_\_\_\_\_

DAVID YOUNG

TRAPS & SHADE

(6)



7

Ismael Moreno

Turneffe Marine Reserve

Lobster Trap Zone Survey

January 2014

1.0 How long have you had your fish camp? 1 Years NEW OWNER

2.0 Do you own or lease the land where your camp sits? Own [checked], Lease, Other

3.0 How do you rate the current lobster fishing at Turneffe? Poor \_\_, Fair [checked], Good \_\_, Excellent

4.0 What is the most important need for Turneffe's fishery?

PATROLING

5.0 What things are damaging the lobster fishery at Turneffe?

HARVESTING SMALL LOGSTER

6.0 Do you support the new Marine Reserve? Yes [checked] No Maybe

7.0 What is your biggest concern about the Marine Reserve?

NO INFORMATION

8.0 Do you feel that the Marine Reserve has been adequately explained to you?

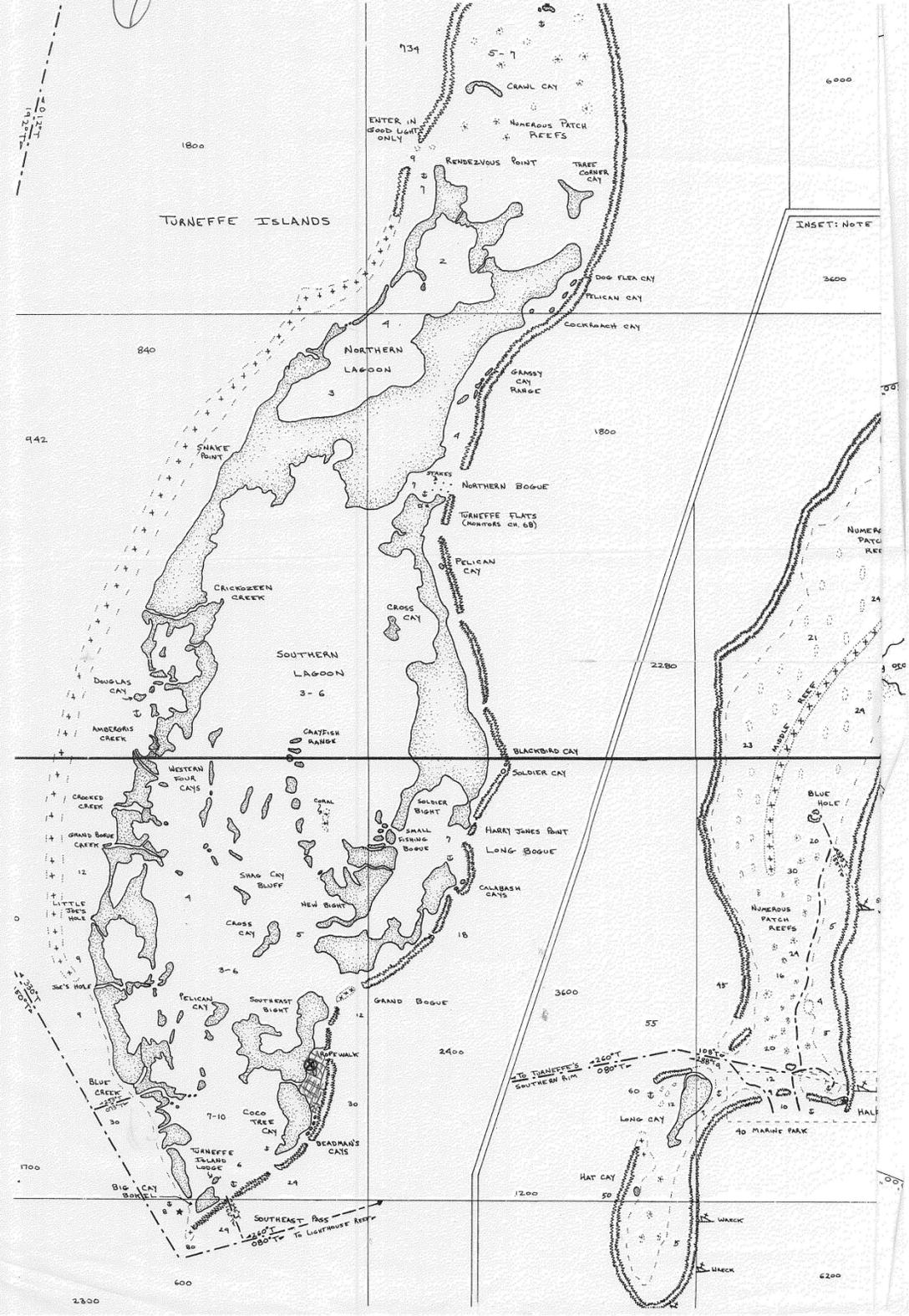
NO

9.0 Do you believe that the Marine Reserve will help your fishing operation? Yes [checked], No

ISMAEL MORENO

SHADE

7



8

Fabian Johnson

Turneffe Marine Reserve

Lobster Trap Zone Survey

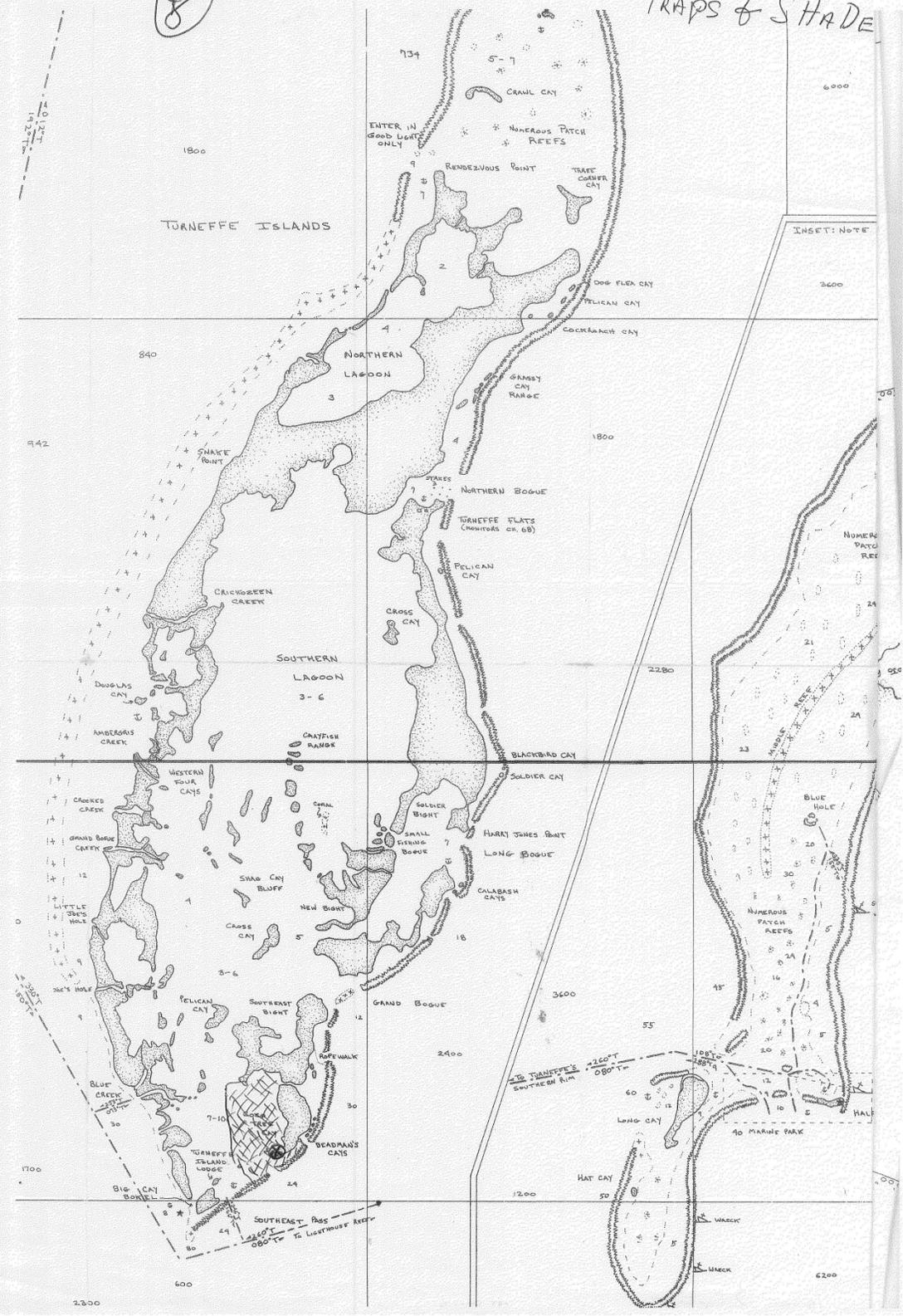
January 2014

- 1.0 How long have you had your fish camp? 43 Years
- 2.0 Do you own or lease the land where your camp sits? Own , Lease \_\_\_\_\_, Other \_\_\_\_\_
- 3.0 How do you rate the current lobster fishing at Turneffe? Poor \_\_\_\_\_, Fair , Good \_\_\_\_\_, Excellent \_\_\_\_\_.
- 4.0 What is the most important need for Turneffe's fishery?  
STOP THE PIRATE FROM STEALING TRAPS & SHADES
- 5.0 What things are damaging the lobster fishery at Turneffe?  
WORKING SMALL LOBSTER
- 6.0 Do you support the new Marine Reserve? Yes  No \_\_\_\_\_ Maybe \_\_\_\_\_.
- 7.0 What is your biggest concern about the Marine Reserve?  
NONE
- 8.0 Do you feel that the Marine Reserve has been adequately explained to you?  
NO
- 9.0 Do you believe that the Marine Reserve will help your fishing operation? Yes , No \_\_\_\_\_

8

FABIAN JOHNSON

TRAPS & SHADE



(9)

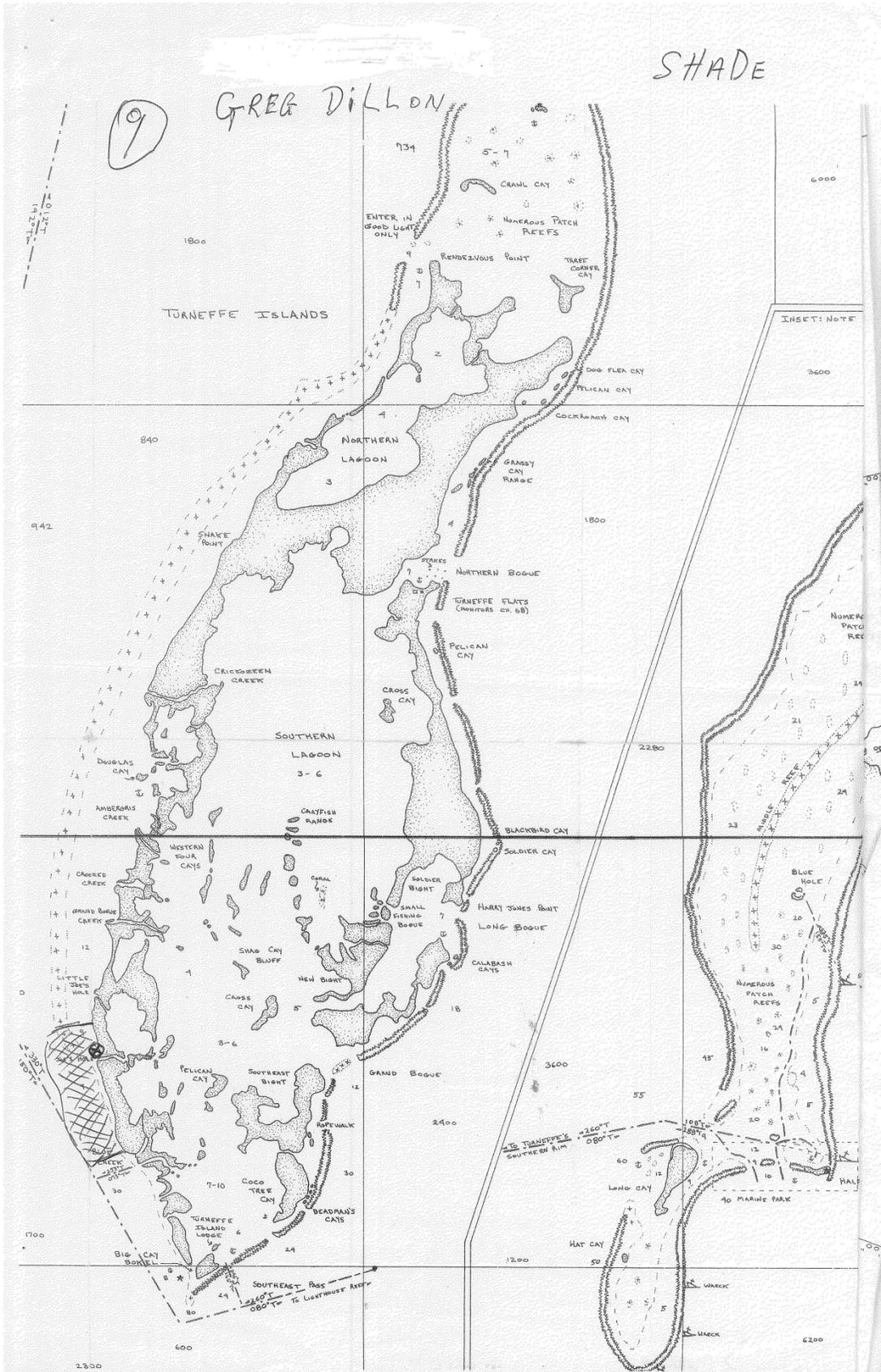
Greg Dillon

Turneffe Marine Reserve

Lobster Trap Zone Survey

January 2014

- 1.0 How long have you had your fish camp? 3 Years
- 2.0 Do you own or lease the land where your camp sits? Own \_\_\_\_\_, Lease \_\_\_\_\_, Other
- 3.0 How do you rate the current lobster fishing at Turneffe? Poor , Fair \_\_\_\_\_, Good \_\_\_\_\_, Excellent \_\_\_\_\_
- 
- 4.0 What is the most important need for Turneffe's fishery?  
PATROLING
- 5.0 What things are damaging the lobster fishery at Turneffe?  
CATCHING UNDER SIZE LOBSTER
- 6.0 Do you support the new Marine Reserve? Yes  No \_\_\_\_\_ Maybe \_\_\_\_\_
- 7.0 What is your biggest concern about the Marine Reserve?  
NONE
- 8.0 Do you feel that the Marine Reserve has been adequately explained to you?  
NO
- 9.0 Do you believe that the Marine Reserve will help your fishing operation? Yes , No \_\_\_\_\_



10

Octavo Flores

Turneffe Marine Reserve

Lobster Trap Zone Survey

January 2014

CAMP BURN DOWN  
STAY AT CAPPY CAMP  
(DANIEL PALACIO)

- 1.0 How long have you had your fish camp? 23 Years
- 2.0 Do you own or lease the land where your camp sits? Own  , Lease  , Other
- 3.0 How do you rate the current lobster fishing at Turneffe? Poor  , Fair  , Good  , Excellent

4.0 What is the most important need for Turneffe's fishery?  
PATROLING

5.0 What things are damaging the lobster fishery at Turneffe?  
PIRATING

6.0 Do you support the new Marine Reserve? Yes  No  Maybe

7.0 What is your biggest concern about the Marine Reserve?  
NONE

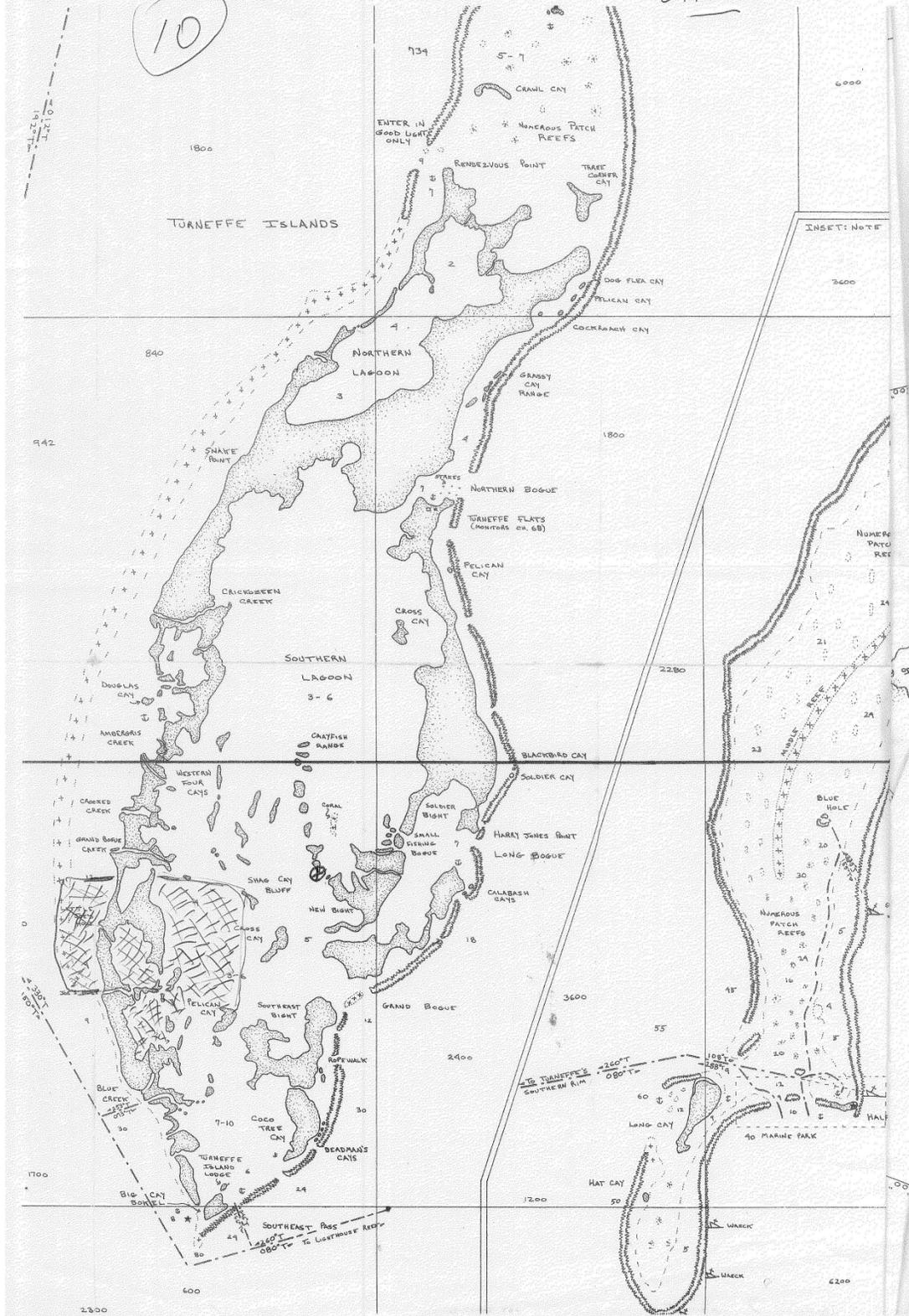
8.0 Do you feel that the Marine Reserve has been adequately explained to you?  
NO

9.0 Do you believe that the Marine Reserve will help your fishing operation? Yes  , No

# OCTIVO FLORES

SHADE

10



(11)

Joseph Tasher

Turneffe Marine Reserve

Lobster Trap Zone Survey

January 2014

- 1.0 How long have you had your fish camp? 20 Years
- 2.0 Do you own or lease the land where your camp sits? Own \_\_\_\_\_, Lease \_\_\_\_\_, Other
- 3.0 How do you rate the current lobster fishing at Turneffe? Poor \_\_\_\_\_, Fair , Good \_\_\_\_\_, Excellent \_\_\_\_\_
- 4.0 What is the most important need for Turneffe's fishery?  
GOOD PATROLING
- 5.0 What things are damaging the lobster fishery at Turneffe?  
KILL SMALL LOGSTER
- 6.0 Do you support the new Marine Reserve? Yes  No \_\_\_\_\_ Maybe \_\_\_\_\_
- 7.0 What is your biggest concern about the Marine Reserve?  
NONE
- 8.0 Do you feel that the Marine Reserve has been adequately explained to you?  
NO
- 9.0 Do you believe that the Marine Reserve will help your fishing operation? Yes  No \_\_\_\_\_



David Flores

12

Turneffe Marine Reserve

Lobster Trap Zone Survey

January 2014

1.0 How long have you had your fish camp? 20 Years

2.0 Do you own or lease the land where your camp sits? Own  Lease  Other

3.0 How do you rate the current lobster fishing at Turneffe? Poor  Fair  Good   
Excellent

4.0 What is the most important need for Turneffe's fishery?

PHONE COMMUN & PATROLLING

5.0 What things are damaging the lobster fishery at Turneffe?

TAKING THE SMALL LOBSTER

6.0 Do you support the new Marine Reserve? Yes  No  Maybe

7.0 What is your biggest concern about the Marine Reserve?

NONE

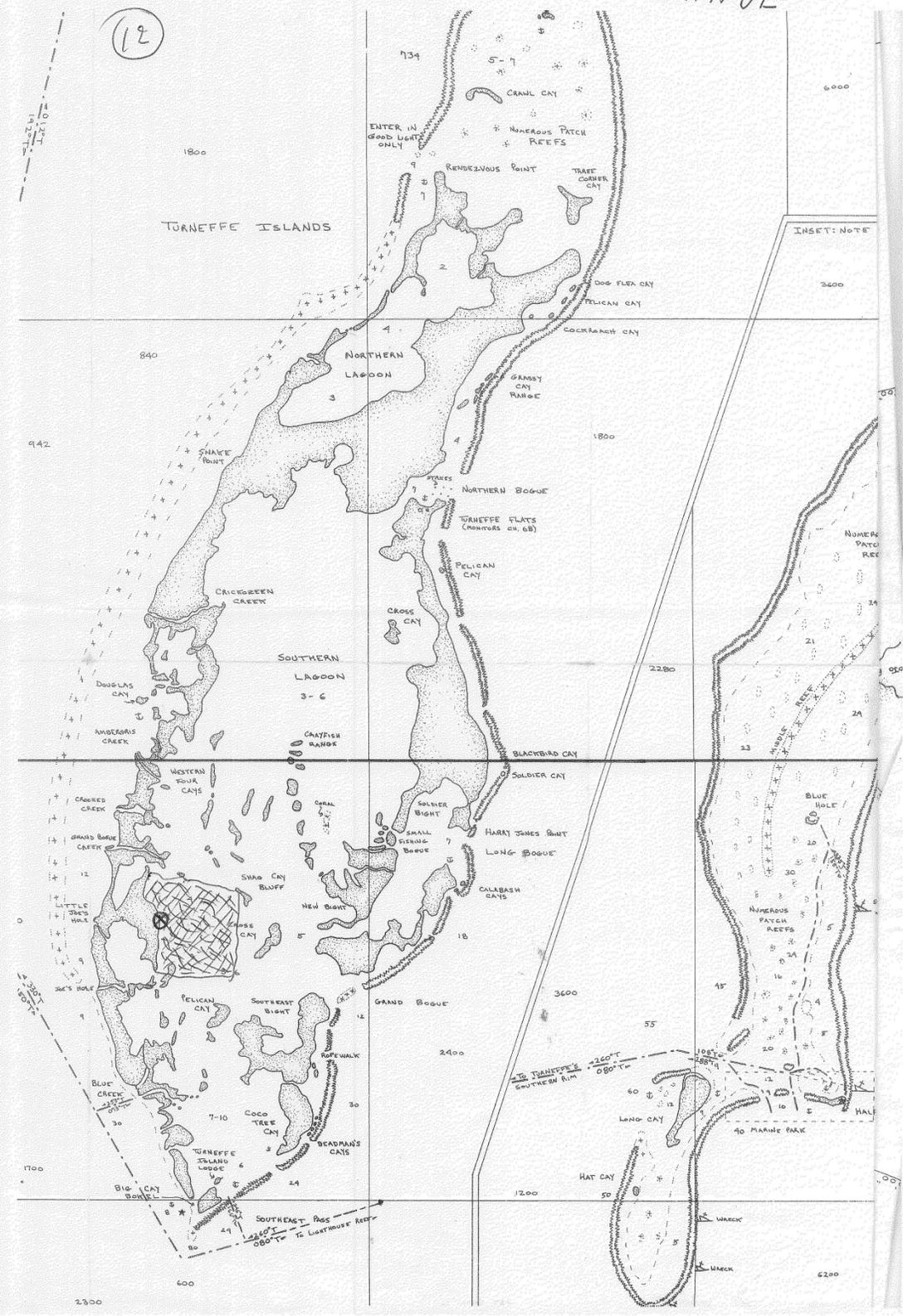
8.0 Do you feel that the Marine Reserve has been adequately explained to you?

NO

9.0 Do you believe that the Marine Reserve will help your fishing operation? Yes  No

DAVID FLORES

SHADE



13

Eligio Tzul

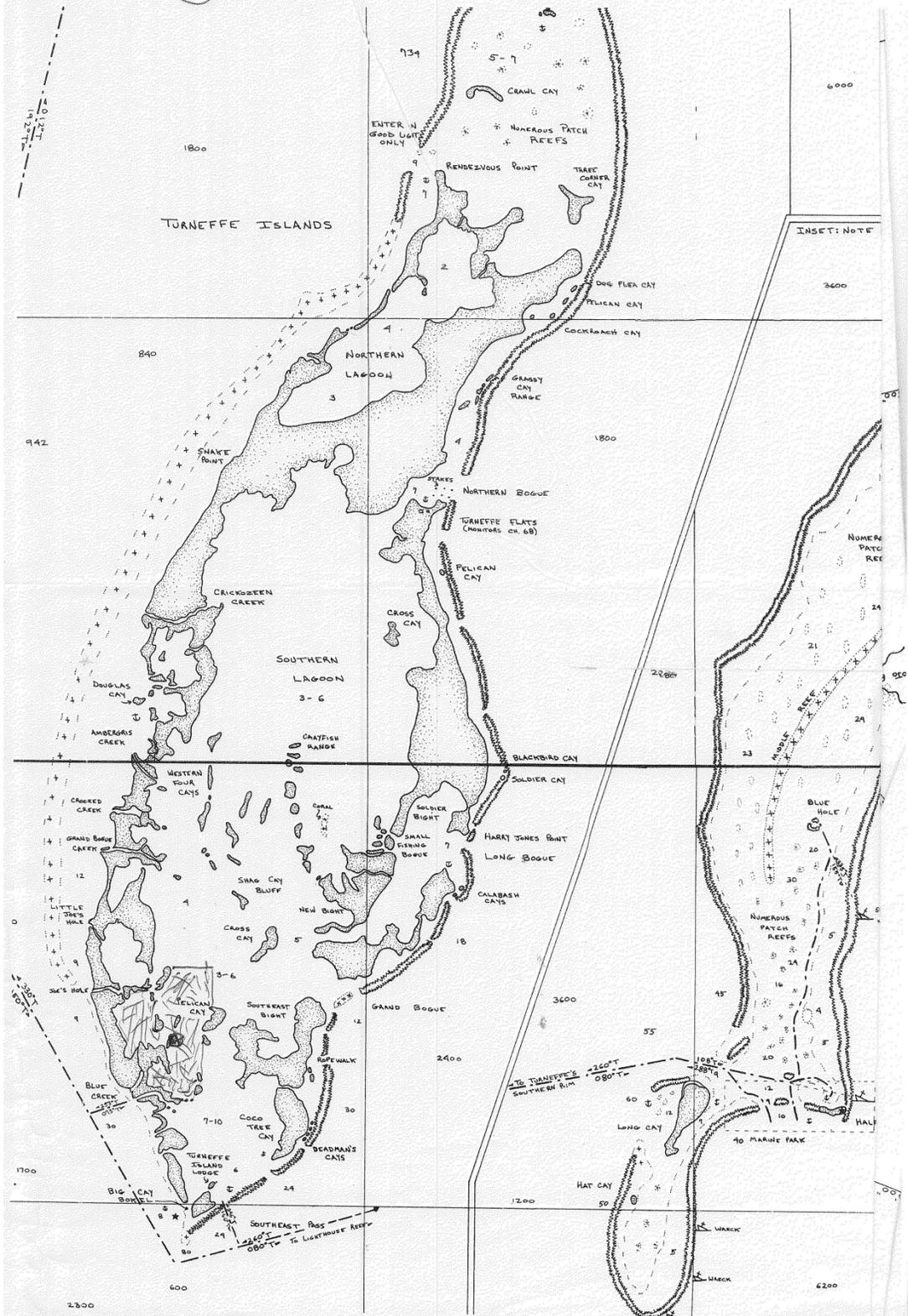
Turneffe Marine Reserve  
Lobster Trap Zone Survey  
January 2014

- 1.0 How long have you had your fish camp? 25 Years
- 2.0 Do you own or lease the land where your camp sits? Own      . Lease      . Other
- 3.0 How do you rate the current lobster fishing at Turneffe? Excellent      . Poor      . Fair      . Good
- 4.0 What is the most important need for Turneffe's fishery?  
PATROLLING
- 5.0 What things are damaging the lobster fishery at Turneffe?  
CATCHING OF SMALL LOBSTER  
+ TOURISM ~~DEVELOPMENT~~ DEVELOPMENT
- 6.0 Do you support the new Marine Reserve? Yes  No      Maybe
- 7.0 What is your biggest concern about the Marine Reserve?  
NONE
- 8.0 Do you feel that the Marine Reserve has been adequately explained to you?  
YES
- 9.0 Do you believe that the Marine Reserve will help your fishing operation? Yes  No

Eligio Tzul

SHADE + TRAPS

13



(14)

Roy Bowden

Turneffe Marine Reserve

Lobster Trap Zone Survey

January 2014

1.0 How long have you had your fish camp? Years

NO CAMP = STAY  
AT JOSEPH TASHER  
CAMP.

2.0 Do you own or lease the land where your camp sits? Own

Lease Other

3.0 How do you rate the current lobster fishing at Turneffe? Poor Excellent

Fair Good

4.0 What is the most important need for Turneffe's fishery?

PATROLING

5.0 What things are damaging the lobster fishery at Turneffe?

PIRATING & CATCH SMALL LOBSTER

6.0 Do you support the new Marine Reserve? Yes

No

Maybe

7.0 What is your biggest concern about the Marine Reserve?

ONLY FOR TOURIST

8.0 Do you feel that the Marine Reserve has been adequately explained to you?

NO

9.0 Do you believe that the Marine Reserve will help your fishing operation? Yes

No



Allan Bevans Green

15

Turneffe Marine Reserve

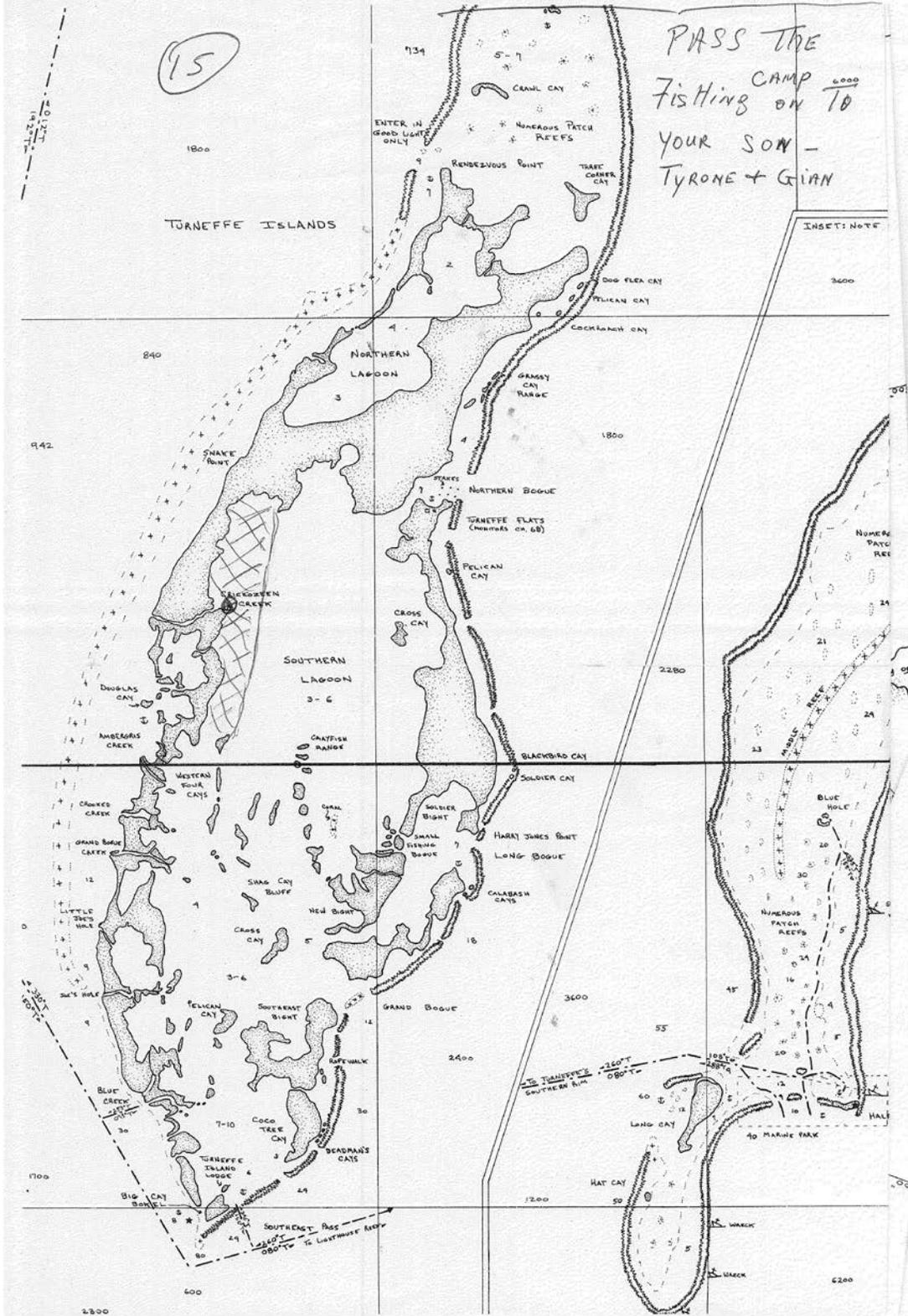
Lobster Trap Zone Survey

January 2014

- 1.0 How long have you had your fish camp? 45 Years
- 2.0 Do you own or lease the land where your camp sits? Own \_\_\_\_\_, Lease \_\_\_\_\_, Other
- 3.0 How do you rate the current lobster fishing at Turneffe? Poor \_\_\_\_\_, Fair , Good \_\_\_\_\_, Excellent \_\_\_\_\_.
- 4.0 What is the most important need for Turneffe's fishery?  
PATROLING
- 5.0 What things are damaging the lobster fishery at Turneffe?  
PIRATING & CATCHING SMALL LOBSTER
- 6.0 Do you support the new Marine Reserve? Yes \_\_\_\_\_ No \_\_\_\_\_ Maybe
- 7.0 What is your biggest concern about the Marine Reserve?  
MANAGEMENT
- 8.0 Do you feel that the Marine Reserve has been adequately explained to you?  
NO
- 9.0 Do you believe that the Marine Reserve will help your fishing operation? Yes \_\_\_\_\_ No

# ALLAN BEVANS GREEN

TRAPS + SHADE



16

# Mouthcreef Flowers

Turneffe Marine Reserve

Lobster Trap Zone Survey

January 2014

- 1.0 How long have you had your fish camp? 35 Years
- 2.0 Do you own or lease the land where your camp sits? Own \_\_\_\_\_, Lease , Other \_\_\_\_\_
- 3.0 How do you rate the current lobster fishing at Turneffe? Poor \_\_\_\_\_, Fair , Good \_\_\_\_\_, Excellent \_\_\_\_\_.
- 4.0 What is the most important need for Turneffe's fishery?  
PATROLING
- 5.0 What things are damaging the lobster fishery at Turneffe?  
CATCH SMALL LOBSTER
- 6.0 Do you support the new Marine Reserve? Yes  No \_\_\_\_\_ Maybe \_\_\_\_\_.
- 7.0 What is your biggest concern about the Marine Reserve?  
How IT IS MANAGE
- 8.0 Do you feel that the Marine Reserve has been adequately explained to you?  
NO
- 9.0 Do you believe that the Marine Reserve will help your fishing operation? Yes , No \_\_\_\_\_



17

Dale Fairweather

Turneffe Marine Reserve

Lobster Trap Zone Survey

January 2014

- 1.0 How long have you had your fish camp? 20 Years
- 2.0 Do you own or lease the land where your camp sits? Own , Lease , Other
- 3.0 How do you rate the current lobster fishing at Turneffe? Poor , Fair , Good , Excellent
- 4.0 What is the most important need for Turneffe's fishery?  
PATROLING
- 5.0 What things are damaging the lobster fishery at Turneffe?  
CATCHING OF SMALL LOBSTER
- 6.0 Do you support the new Marine Reserve? Yes , No , Maybe
- 7.0 What is your biggest concern about the Marine Reserve?  
NONE
- 8.0 Do you feel that the Marine Reserve has been adequately explained to you?  
YES
- 9.0 Do you believe that the Marine Reserve will help your fishing operation? Yes , No



18

Alfred Barrow

Turneffe Marine Reserve

Lobster Trap Zone Survey

January 2014

1.0 How long have you had your fish camp? 45 Years

2.0 Do you own or lease the land where your camp sits? Own  Lease  Other

Excellent  FAIR

4.0 What is the most important need for Turneffe's fishery?  
ENFORCE THE LAW

5.0 What things are damaging the lobster fishery at Turneffe?  
PIRATING & CATCHING THE UNDER SIZE LOBSTER

6.0 Do you support the new Marine Reserve? Yes  No  Maybe

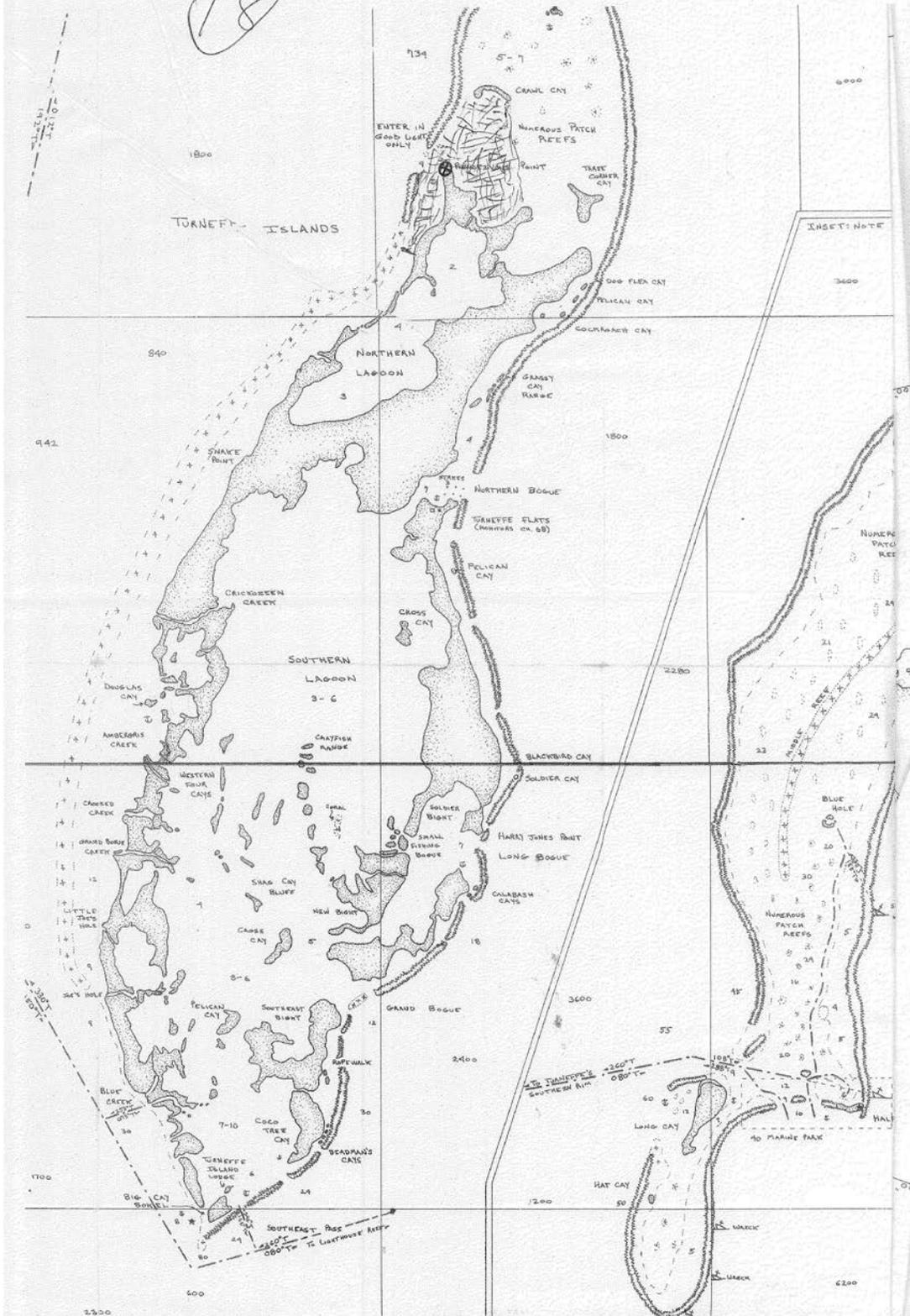
7.0 What is your biggest concern about the Marine Reserve?  
LONG TALK AND NOTHING THE HAPPENING

8.0 Do you feel that the Marine Reserve has been adequately explained to you?  
NO

9.0 Do you believe that the Marine Reserve will help your fishing operation? Yes  No

# ALFRED BARRON

## TRAPS & SHADE



19

Isaac Lambey

Turneffe Marine Reserve

Lobster Trap Zone Survey

January 2014

1.0 How long have you had your fish camp? 20 Years

2.0 Do you own or lease the land where your camp sits? Own , Lease , Other

3.0 How do you rate the current lobster fishing at Turneffe? Poor , Fair , Good , Excellent

4.0 What is the most important need for Turneffe's fishery?

PATROL

5.0 What things are damaging the lobster fishery at Turneffe?

HURRICANE

6.0 Do you support the new Marine Reserve? Yes  No  Maybe

7.0 What is your biggest concern about the Marine Reserve?

MAGA CAYE NO FISHING ZONE  
Too Big.

8.0 Do you feel that the Marine Reserve has been adequately explained to you?

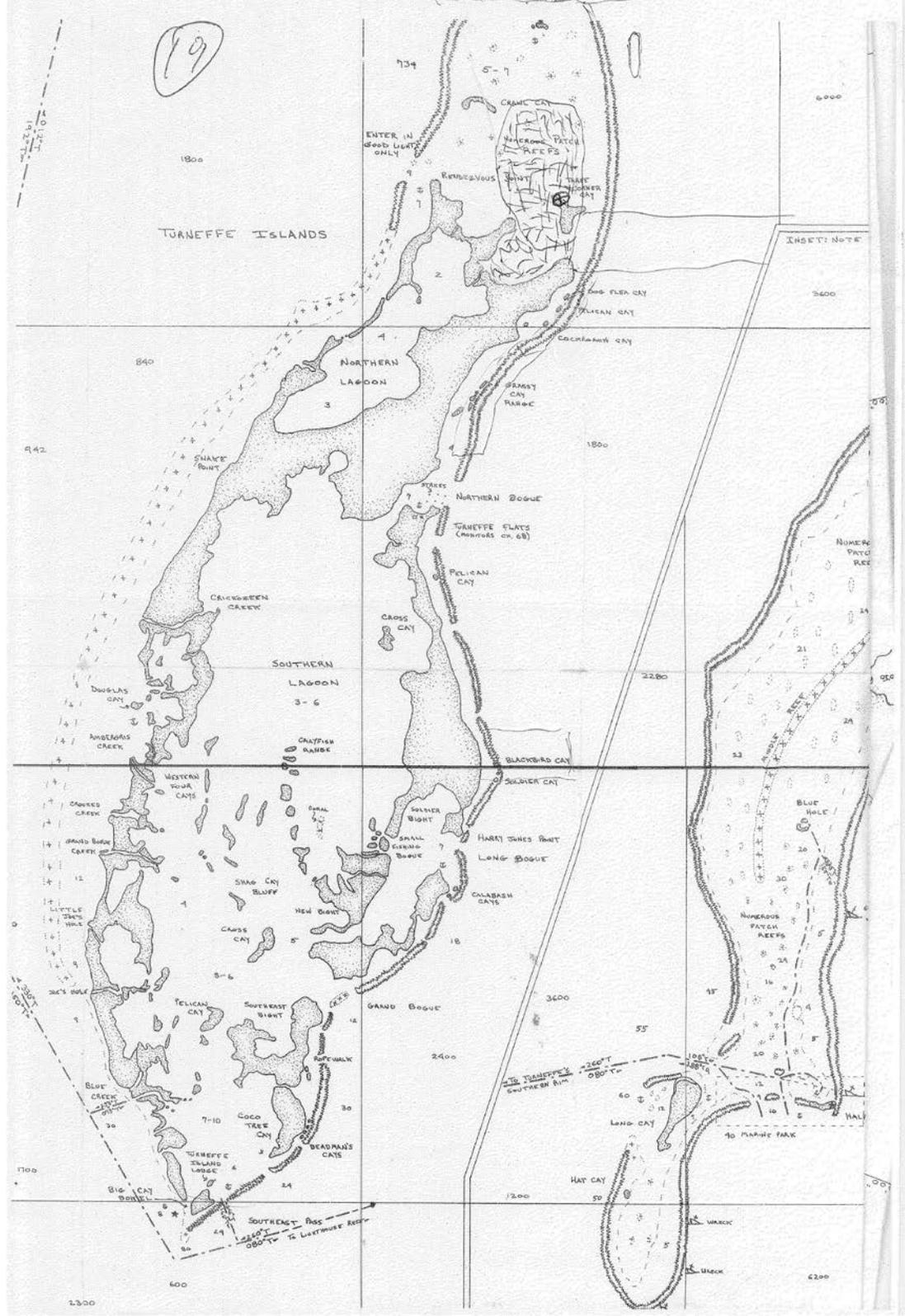
NO

9.0 Do you believe that the Marine Reserve will help your fishing operation? Yes  No

ISAAC LAMBEY

SHADE

19



(20)

Kent Gillett

Turneffe Marine Reserve

Lobster Trap Zone Survey

January 2014

- 1.0 How long have you had your fish camp? \_\_\_\_\_ Years *NO CAMP*
- 2.0 Do you own or lease the land where your camp sits? Own \_\_\_\_\_, Lease \_\_\_\_\_, Other \_\_\_\_\_
- 3.0 How do you rate the current lobster fishing at Turneffe? Poor , Fair \_\_\_\_\_, Good \_\_\_\_\_, Excellent \_\_\_\_\_.
- 4.0 What is the most important need for Turneffe's fishery?  
*PATROLING*
- 5.0 What things are damaging the lobster fishery at Turneffe?  
*OUT OF SEASON FISHING*
- 6.0 Do you support the new Marine Reserve? Yes  No \_\_\_\_\_ Maybe \_\_\_\_\_.
- 7.0 What is your biggest concern about the Marine Reserve?  
*WHERE TO FISH or NOT TO FISH*
- 8.0 Do you feel that the Marine Reserve has been adequately explained to you?  
*NO*
- 9.0 Do you believe that the Marine Reserve will help your fishing operation? Yes , No \_\_\_\_\_



(21) Anthony Allen

Turneffe Marine Reserve

Lobster Trap Zone Survey

January 2014

- 1.0 How long have you had your fish camp? \_\_\_\_\_ Years *NO CAMP*
- 2.0 Do you own or lease the land where your camp sits? Own \_\_\_\_\_, Lease \_\_\_\_\_, Other \_\_\_\_\_
- 3.0 How do you rate the current lobster fishing at Turneffe? Poor , Fair \_\_\_\_\_, Good \_\_\_\_\_, Excellent \_\_\_\_\_.
- 4.0 What is the most important need for Turneffe's fishery?  
*PATROLING*
- 5.0 What things are damaging the lobster fishery at Turneffe?
- 6.0 Do you support the new Marine Reserve? Yes  No \_\_\_\_\_ Maybe \_\_\_\_\_.
- 7.0 What is your biggest concern about the Marine Reserve?  
*WHERE TO FISH or WHERE NOT TO FISH*
- 8.0 Do you feel that the Marine Reserve has been adequately explained to you?  
*NO*
- 9.0 Do you believe that the Marine Reserve will help your fishing operation? Yes  No \_\_\_\_\_



(22)

Leavan Aldana

Turneffe Marine Reserve

Lobster Trap Zone Survey

January 2014

- 1.0 How long have you had your fish camp? 50 Years
- 2.0 Do you own or lease the land where your camp sits? Own \_\_\_\_\_, Lease , Other \_\_\_\_\_
- 3.0 How do you rate the current lobster fishing at Turneffe? Poor \_\_\_\_\_, Fair , Good \_\_\_\_\_, Excellent \_\_\_\_\_.
- 4.0 What is the most important need for Turneffe's fishery?  
PATROLING
- 5.0 What things are damaging the lobster fishery at Turneffe?  
PIRATE, SAILBOAT guys, TAKING SMALL LOBSTER
- 6.0 Do you support the new Marine Reserve? Yes \_\_\_\_\_ No \_\_\_\_\_ Maybe .
- 7.0 What is your biggest concern about the Marine Reserve?  
STOP MAN FROM FISHING WITH HOOK & LINE
- 8.0 Do you feel that the Marine Reserve has been adequately explained to you?  
NO
- 9.0 Do you believe that the Marine Reserve will help your fishing operation? Yes , No \_\_\_\_\_



Wayne Jones

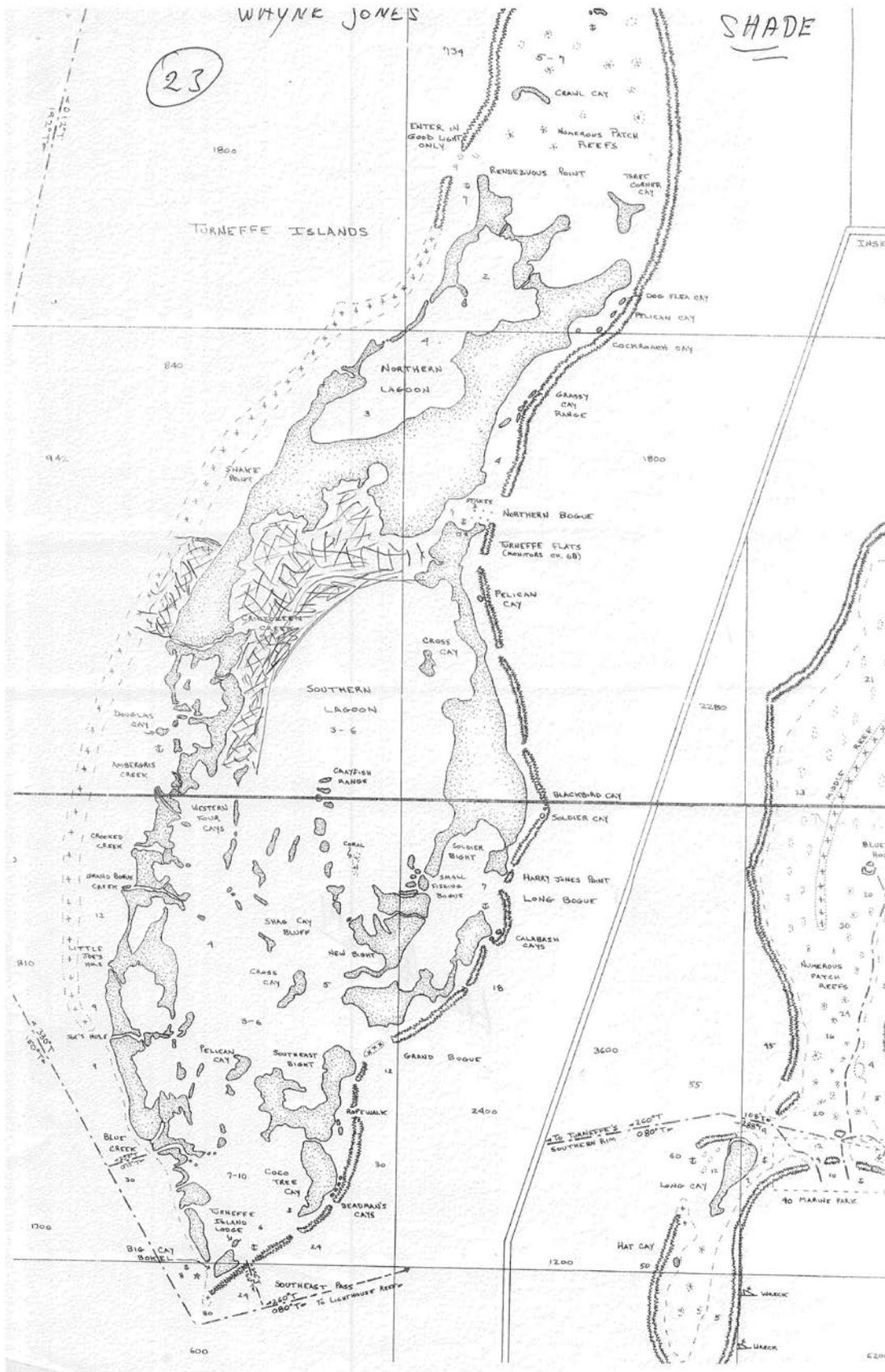
23

Turneffe Marine Reserve

Lobster Trap Zone Survey

January 2014

- 1.0 How long have you had your fish camp? \_\_\_\_\_ Years **NO CAMP**
- 2.0 Do you own or lease the land where your camp sits? Own \_\_\_\_\_, Lease \_\_\_\_\_, Other \_\_\_\_\_
- 3.0 How do you rate the current lobster fishing at Turneffe? Poor , Fair \_\_\_\_\_, Good \_\_\_\_\_, Excellent \_\_\_\_\_
- 4.0 What is the most important need for Turneffe's fishery?  
**PATROLING**
- 5.0 What things are damaging the lobster fishery at Turneffe?  
**CATCHING SMALL LOBSTER**
- 6.0 Do you support the new Marine Reserve? Yes  No \_\_\_\_\_ Maybe \_\_\_\_\_
- 7.0 What is your biggest concern about the Marine Reserve?  
**TAKE CARE OF IT.**  
**E.T.C good PATROLING**
- 8.0 Do you feel that the Marine Reserve has been adequately explained to you?  
**NO**
- 9.0 Do you believe that the Marine Reserve will help your fishing operation? Yes  No \_\_\_\_\_



Michael Welch

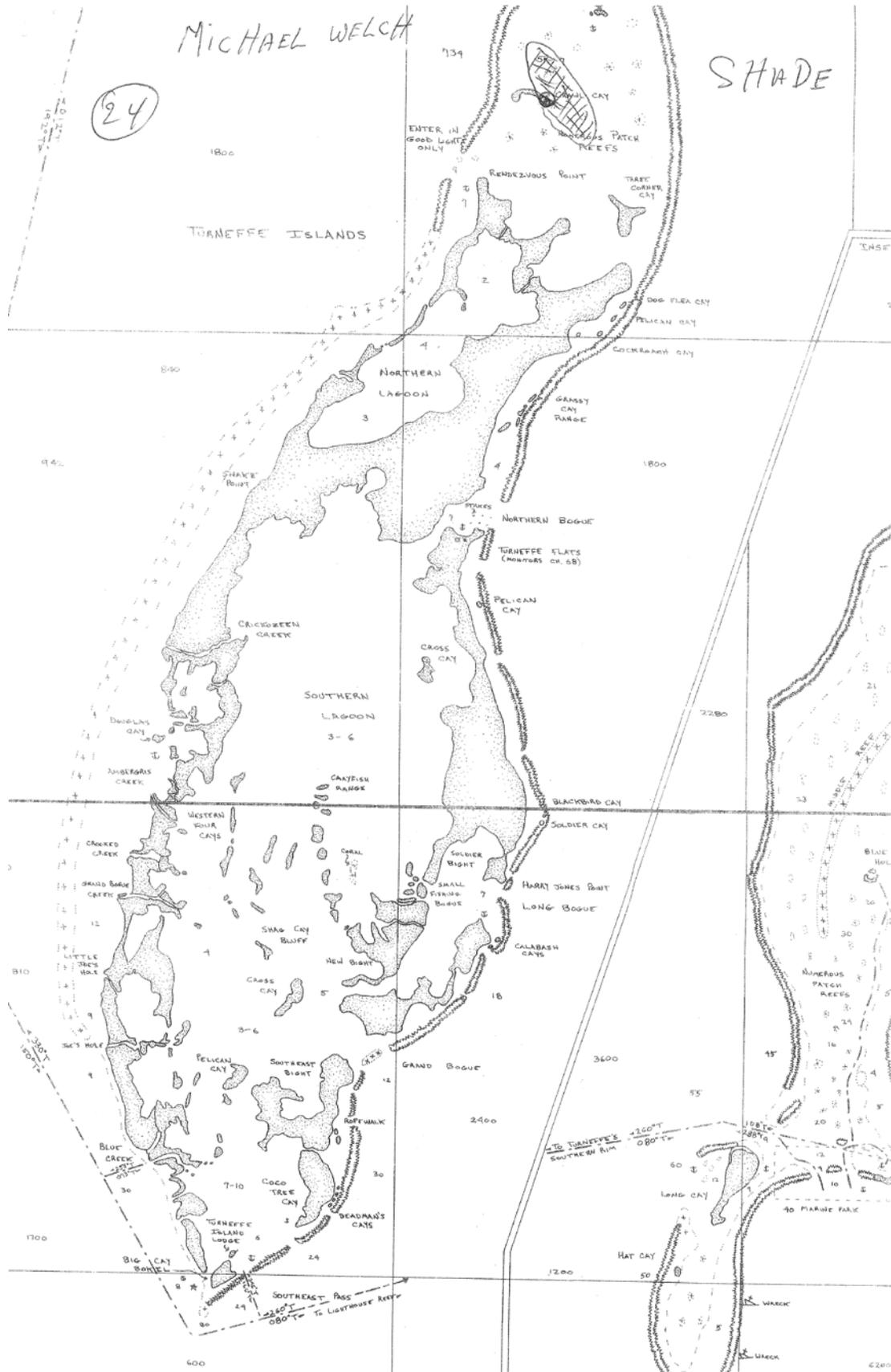
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Turneffe Marine Reserve

Lobster Trap Zone Survey

January 2014

- 1.0 How long have you had your fish camp? 12 Years
- 2.0 Do you own or lease the land where your camp sits? Own \_\_\_\_\_, Lease , Other \_\_\_\_\_
- 3.0 How do you rate the current lobster fishing at Turneffe? Poor \_\_\_\_\_, Fair , Good \_\_\_\_\_, Excellent \_\_\_\_\_
- 4.0 What is the most important need for Turneffe's fishery?  
PATROLING
- 5.0 What things are damaging the lobster fishery at Turneffe?  
MAN THAT PIRATE your things
- 6.0 Do you support the new Marine Reserve? Yes , No \_\_\_\_\_, Maybe \_\_\_\_\_
- 7.0 What is your biggest concern about the Marine Reserve?  
NONE
- 8.0 Do you feel that the Marine Reserve has been adequately explained to you?  
YES
- 9.0 Do you believe that the Marine Reserve will help your fishing operation? Yes , No \_\_\_\_\_



25

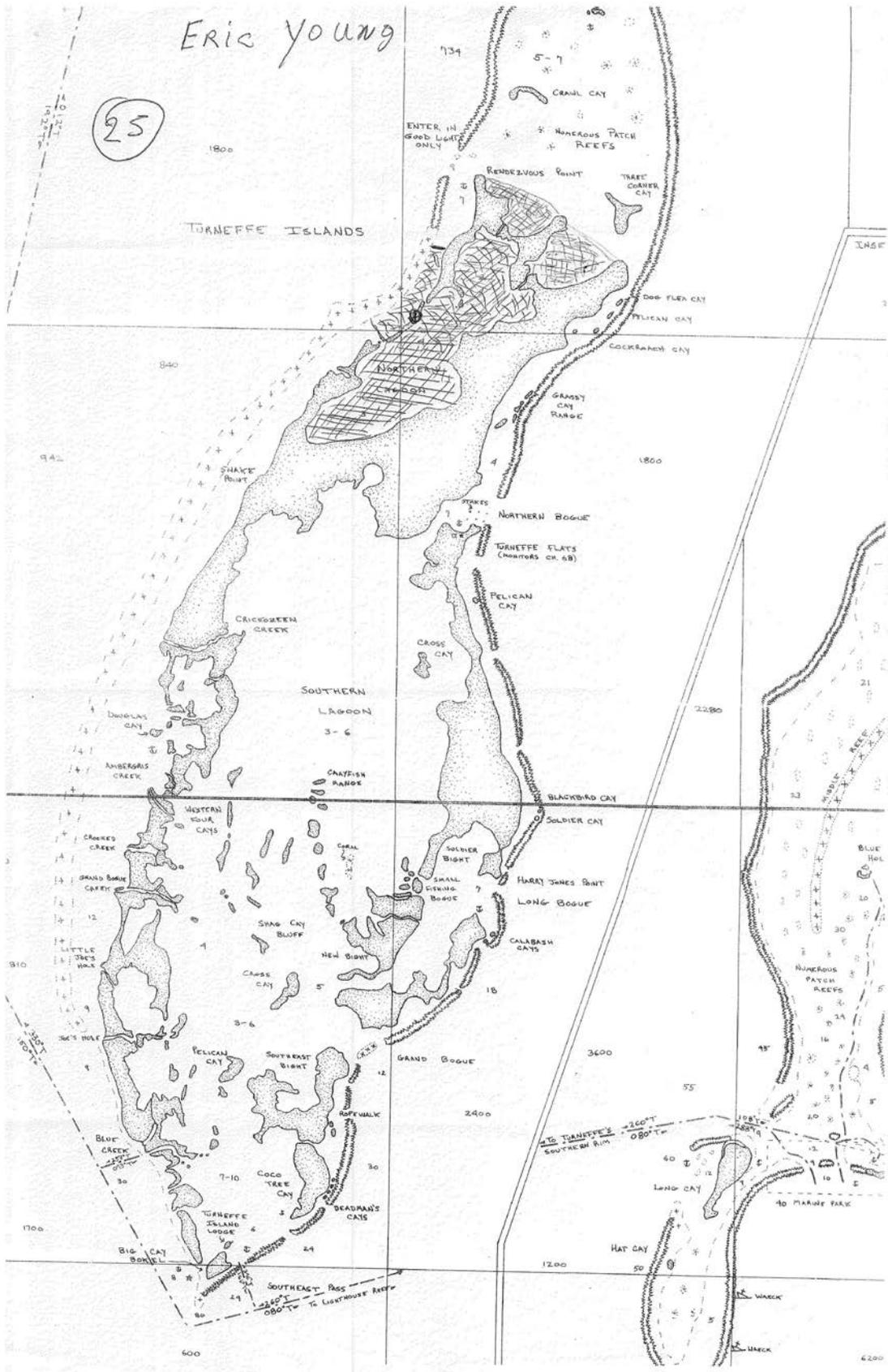
Eric Young

Turneffe Marine Reserve

Lobster Trap Zone Survey

January 2014

- 1.0 How long have you had your fish camp? 14 Years
- 2.0 Do you own or lease the land where your camp sits? Own \_\_\_\_\_, Lease , Other \_\_\_\_\_
- 3.0 How do you rate the current lobster fishing at Turneffe? Poor \_\_\_\_\_, Fair \_\_\_\_\_, Good , Excellent \_\_\_\_\_.
- 4.0 What is the most important need for Turneffe's fishery?  
PATROLING
- 5.0 What things are damaging the lobster fishery at Turneffe?
- 6.0 Do you support the new Marine Reserve? Yes  No \_\_\_\_\_ Maybe \_\_\_\_\_.
- 7.0 What is your biggest concern about the Marine Reserve?  
SPECIAL LICENSE FOR TURNEFFE FISHERMAN ONLY.
- 8.0 Do you feel that the Marine Reserve has been adequately explained to you?  
YES
- 9.0 Do you believe that the Marine Reserve will help your fishing operation? Yes , No \_\_\_\_\_



Alburn Plunkett

26

Turneffe Marine Reserve

Lobster Trap Zone Survey

January 2014

- 1.0 How long have you had your fish camp? 13 Years
- 2.0 Do you own or lease the land where your camp sits? Own \_\_\_\_\_, Lease \_\_\_\_\_, Other  \_\_\_\_\_
- 3.0 How do you rate the current lobster fishing at Turneffe? Poor \_\_\_\_\_, Fair \_\_\_\_\_, Good  \_\_\_\_\_, Excellent \_\_\_\_\_
- 4.0 What is the most important need for Turneffe's fishery?  
PATROLING & SHOW THE BOUNDREY of NO
- 5.0 What things are damaging the lobster fishery at Turneffe? FISHING ZONE  
PIRATE & CATCHING SMALL LOBSTER
- 6.0 Do you support the new Marine Reserve? Yes  No \_\_\_\_\_ Maybe \_\_\_\_\_
- 7.0 What is your biggest concern about the Marine Reserve?  
NONE
- 8.0 Do you feel that the Marine Reserve has been adequately explained to you?  
NO
- 9.0 Do you believe that the Marine Reserve will help your fishing operation? Yes  No \_\_\_\_\_



Dionicio Edwards

27

Turneffe Marine Reserve

Lobster Trap Zone Survey

January 2014

CAMP BARN  
DOWN ABOUT  
2 MONTHS

- 1.0 How long have you had your fish camp? 5 Years
- 2.0 Do you own or lease the land where your camp sits? Own \_\_\_\_\_, Lease \_\_\_\_\_, Other
- 3.0 How do you rate the current lobster fishing at Turneffe? Poor \_\_\_\_\_, Fair \_\_\_\_\_, Good e,  
Excellent \_\_\_\_\_

4.0 What is the most important need for Turneffe's fishery?

PATROLING

5.0 What things are damaging the lobster fishery at Turneffe?

STOP CATCH SMALL LOBSTER

6.0 Do you support the new Marine Reserve? Yes  No \_\_\_\_\_ Maybe \_\_\_\_\_

7.0 What is your biggest concern about the Marine Reserve?

STOP RANGER FROM ALLOWING FISHER TO  
WORK IN NO FISHING ZONE & COLLECT FROM  
THEM

8.0 Do you feel that the Marine Reserve has been adequately explained to you?

NO

9.0 Do you believe that the Marine Reserve will help your fishing operation? Yes  No \_\_\_\_\_



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Daniel Palacio

Turneffe Marine Reserve

Lobster Trap Zone Survey

January 2014

- 1.0 How long have you had your fish camp? 20 Years
- 2.0 Do you own or lease the land where your camp sits? Own \_\_\_\_\_, Lease \_\_\_\_\_, Other \_\_\_\_\_
- 3.0 How do you rate the current lobster fishing at Turneffe? Poor \_\_\_\_\_, Fair \_\_\_\_\_, Good \_\_\_\_\_, Excellent \_\_\_\_\_.

4.0 What is the most important need for Turneffe's fishery?

PATROLLING

5.0 What things are damaging the lobster fishery at Turneffe?

CATCHING SMALL LOBSTER

6.0 Do you support the new Marine Reserve? Yes ✓ No \_\_\_\_\_ Maybe \_\_\_\_\_.

7.0 What is your biggest concern about the Marine Reserve?

PIRATING IN THE RESERVE

8.0 Do you feel that the Marine Reserve has been adequately explained to you?

NO

9.0 Do you believe that the Marine Reserve will help your fishing operation? Yes ✓, No \_\_\_\_\_



Nicholas Diego

Turneffe Marine Reserve

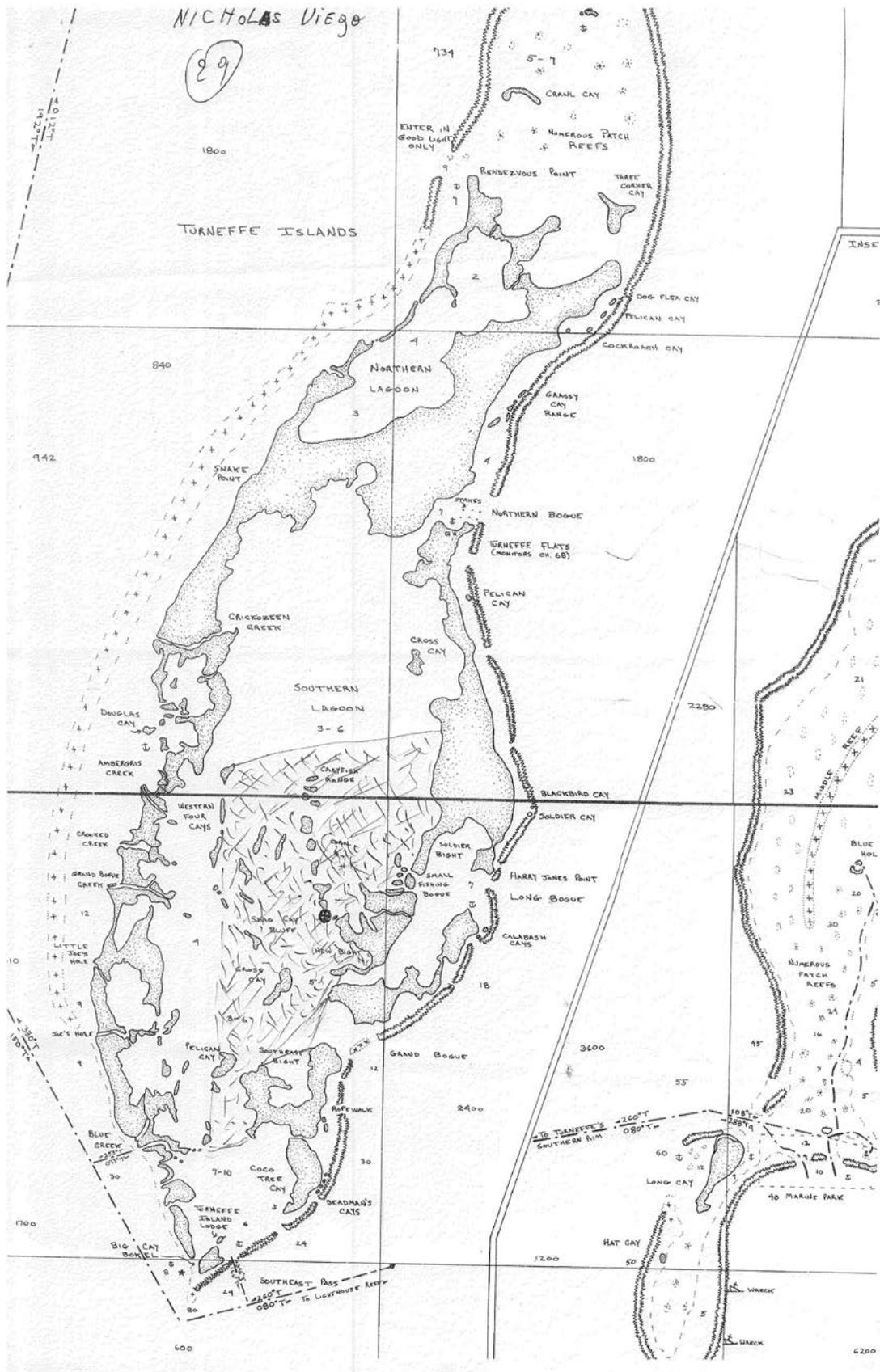
Lobster Trap Zone Survey

January 2014

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CAMP AT CAPPY

- 1.0 How long have you had your fish camp? \_\_\_\_\_ Years
- 2.0 Do you own or lease the land where your camp sits? Own \_\_\_\_\_, Lease \_\_\_\_\_, Other \_\_\_\_\_
- 3.0 How do you rate the current lobster fishing at Turneffe? Poor \_\_\_\_\_, Fair  Good \_\_\_\_\_, Excellent \_\_\_\_\_.
- 4.0 What is the most important need for Turneffe's fishery?  
PATROLING
- 5.0 What things are damaging the lobster fishery at Turneffe?  
CATCHING SMALL LOBSTER
- 6.0 Do you support the new Marine Reserve? Yes  No \_\_\_\_\_ Maybe \_\_\_\_\_.
- 7.0 What is your biggest concern about the Marine Reserve?  
NONE
- 8.0 Do you feel that the Marine Reserve has been adequately explained to you?  
NO
- 9.0 Do you believe that the Marine Reserve will help your fishing operation? Yes  No \_\_\_\_\_



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Frank Andrews

Turneffe Marine Reserve

Lobster Trap Zone Survey

January 2014

CAMP AT CAMP

- 1.0 How long have you had your fish camp? \_\_\_\_\_ Years
- 2.0 Do you own or lease the land where your camp sits? Own \_\_\_\_\_, Lease \_\_\_\_\_, Other \_\_\_\_\_
- 3.0 How do you rate the current lobster fishing at Turneffe? Poor \_\_\_\_\_, Fair , Good \_\_\_\_\_, Excellent \_\_\_\_\_.

4.0 What is the most important need for Turneffe's fishery?

PATROLING

5.0 What things are damaging the lobster fishery at Turneffe?

CATCHING SMALL LOBSTER & THE GUYS THAT WORK OFF SEASON.

6.0 Do you support the new Marine Reserve? Yes  No \_\_\_\_\_ Maybe \_\_\_\_\_.

7.0 What is your biggest concern about the Marine Reserve?

TO KEEP 10% NO FISHING ZONE & TAKE NOT BIGGER AREA

8.0 Do you feel that the Marine Reserve has been adequately explained to you?

YES

9.0 Do you believe that the Marine Reserve will help your fishing operation? Yes  No \_\_\_\_\_



(31)

Jason Young

Turneffe Marine Reserve

Lobster Trap Zone Survey

January 2014

1.0 How long have you had your fish camp? 34 Years

2.0 Do you own or lease the land where your camp sits? Own \_\_\_\_\_, Lease , Other \_\_\_\_\_

3.0 How do you rate the current lobster fishing at Turneffe? Poor \_\_\_\_\_, Fair , Good \_\_\_\_\_, Excellent \_\_\_\_\_.

4.0 What is the most important need for Turneffe's fishery?

PATROLING & COMMUNICATION SYSTEM IN PLACE

5.0 What things are damaging the lobster fishery at Turneffe?

CATCHING SMALL LOBSTER & WORKING OFF SEASON

6.0 Do you support the new Marine Reserve? Yes  No \_\_\_\_\_ Maybe \_\_\_\_\_.

7.0 What is your biggest concern about the Marine Reserve?

How it will be manage

8.0 Do you feel that the Marine Reserve has been adequately explained to you?

YES

9.0 Do you believe that the Marine Reserve will help your fishing operation? Yes , No \_\_\_\_\_



William Johnson

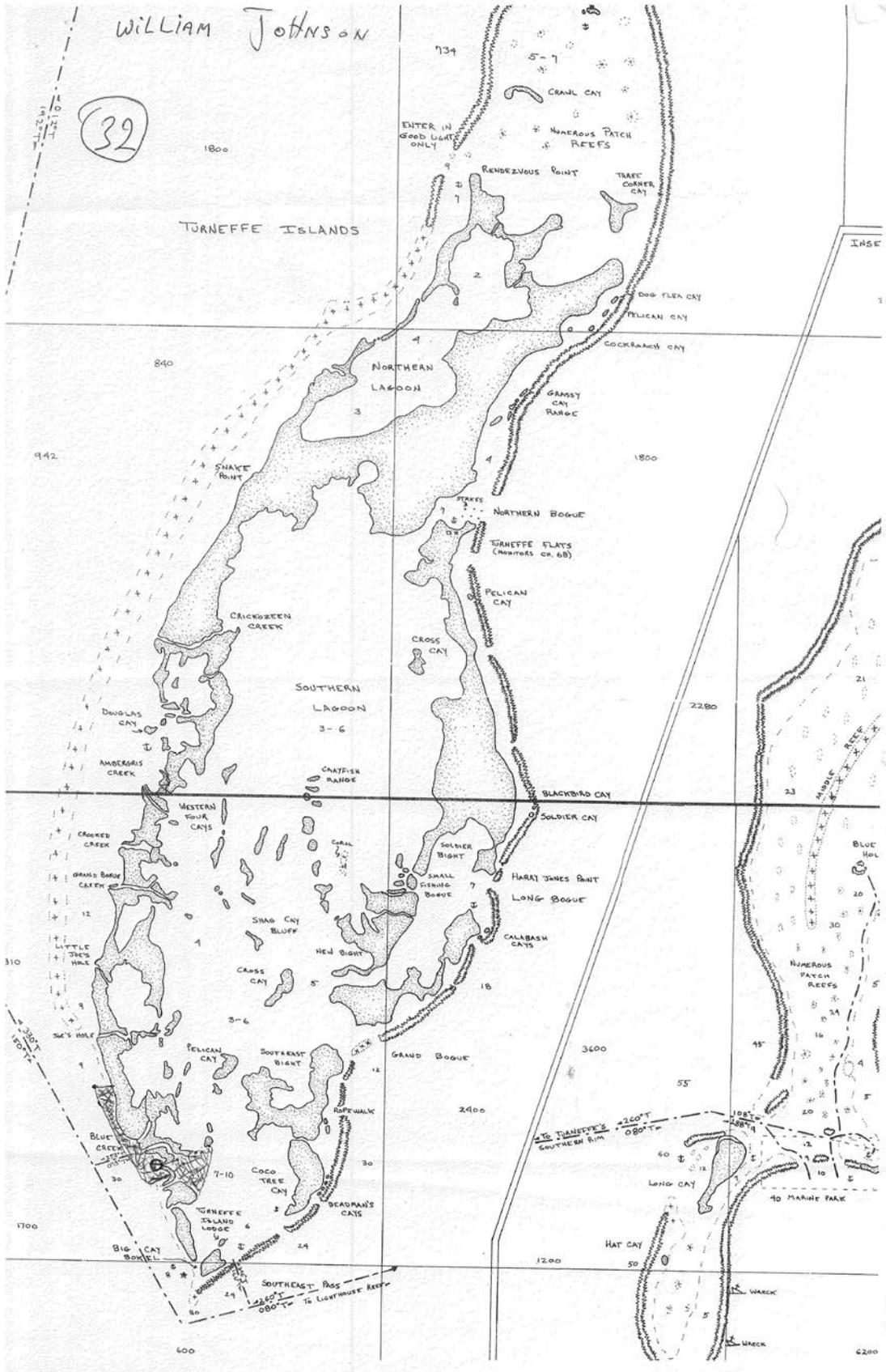
Turneffe Marine Reserve

Lobster Trap Zone Survey

January 2014

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- 1.0 How long have you had your fish camp? 4 Years
- 2.0 Do you own or lease the land where your camp sits? Own \_\_\_\_\_, Lease \_\_\_\_\_, Other
- 3.0 How do you rate the current lobster fishing at Turneffe? Poor \_\_\_\_\_, Fair , Good \_\_\_\_\_, Excellent \_\_\_\_\_.
- 4.0 What is the most important need for Turneffe's fishery?  
PATROLING THE AREA
- 5.0 What things are damaging the lobster fishery at Turneffe?  
CATCHING OF SMALL LOBSTER
- 6.0 Do you support the new Marine Reserve? Yes  No \_\_\_\_\_ Maybe \_\_\_\_\_.
- 7.0 What is your biggest concern about the Marine Reserve?  
NONE
- 8.0 Do you feel that the Marine Reserve has been adequately explained to you?  
NO
- 9.0 Do you believe that the Marine Reserve will help your fishing operation? Yes , No \_\_\_\_\_



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George Marin

Turneffe Marine Reserve

Lobster Trap Zone Survey

January 2014

1.0 How long have you had your fish camp? 32 Years

2.0 Do you own or lease the land where your camp sits? Own \_\_\_\_\_, Lease , Other \_\_\_\_\_

3.0 How do you rate the current lobster fishing at Turneffe? Poor \_\_\_\_\_, Fair , Good \_\_\_\_\_, Excellent \_\_\_\_\_.

4.0 What is the most important need for Turneffe's fishery?

PATROLING

5.0 What things are damaging the lobster fishery at Turneffe?

CATCHING SMALL LOBSTER & PIRATING

6.0 Do you support the new Marine Reserve? Yes , No \_\_\_\_\_, Maybe \_\_\_\_\_.

7.0 What is your biggest concern about the Marine Reserve?

NONE

8.0 Do you feel that the Marine Reserve has been adequately explained to you?

NO

9.0 Do you believe that the Marine Reserve will help your fishing operation? Yes , No \_\_\_\_\_

