Nature-based tourism and behavior for household waste reduction: Divers and non-divers

Turismo de naturaleza y comportamiento para reducir desechos en el hogar: Buceadores y no buceadores

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Abstract

Marine environments are currently threatened by marine litter originating in offshore marine structures and land-based sources. Moreover, debris is directly related to anthropogenic activities, particularly poor waste management practices, and natural disasters. Taking scuba diving as nature-based tourism activity in a popular tourism destination in Mexico, for a period of 66 days, 181 American divers were assessed as regards their behavior in the home regarding plastic use and food waste production. Certified divers registered their behavior ona Likert-type scale, and the information was compared with non-divers participating in try-dives, or taking training levels for certification. In general, both groups have registered good waste-management practices, although, certified divers show evidence of adopting better practices in the home in order to reduce waste, probably because they are aware of the benefits for the environment.

Keywords: Behavior, food waste, marine environment, plastic, scuba diving.

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Resumen

Los medios marinos se ven amenazados por desechos originados en altamar y también por actividades terrestres; estos se relacionan con las malas prácticas de gestión de residuos y con los desastres naturales. Mediante el buceo como actividad de turismo de naturaleza en México y durante un periodo de 66 días, 181 buzos estadounidenses fueron evaluados por el comportamiento en su hogar con respecto al uso de plástico y la producción de residuos de alimentos. Buceadores certificados han registrado su comportamiento en una escala de tipo Likert y la información fue comparada con el grupo de individuos que cursaban niveles de formación para obtener su certificación de buceo. En general, ambos grupos han registrado una buena práctica para la reducción de desechos, aunque buceadores certificados dan evidencia de tener un nivel más alto de comportamiento para disminuir los residuos en su hogar, probablemente porque son conscientes del beneficio que esto causa al ambiente.

Palabras clave: Ambiente marino, buceo, conducta, desechos de alimentos, plástico.

Introduction

Jacques Costeau and Emile Gangan's re-invention of the breathing regulator to include a demand valve in 1943 opened up a new world for discovery, and many expeditions have been conducted since then to explore the sea bed. Scuba diving allowed people to learn more about the oceans and later became a leisure activity. It has continued to flourish and become more popular among those devoted to the sea (Dimmock, as cited in Jennings, 2007). The World Tourism Organization promoted the growth of the activity until 2010, as a result of which diving took place in remote and unexplored locations, meaning that scuba diving became a trendy activity. Tour operators began showing interest in becoming involved, proposing associations with specialist diving bases (WTO, 2001). The popularity of diving-related activities has mainly been reflected in snorkelling and scuba diving activities (Orams, 1999). As the leader of the diving industry, PADI (2013) has certified over 750,000 new divers every year for the past 16 years. The training agency has reached such a level of standardization and popularity that it is represented in more than 180 countries, offering training materials in over 26 languages.

Scuba-related environmental impacts were noted in terms of positive aspects, mainly associated with economic benefits and employment opportunities. The negative side was revealed by

wildlife impacts, whereby animals have changed their behavior due to contact with tourists, with authors reporting their concerns and measuring the consequences and long-term learning impacts (Orams, 1996; Falk *et al.*, 2007; Ballantyne *et al.,* 2011). Over-usage of the reefs is resulting in physical devastation and chemical contamination. Land development to support scuba diving also causes negative impacts and affects the surrounding infrastructure (Musa, 2003; Garrod and Gössling, 2008). Marine debris originating out at sea is mostly associated with activities related to the fishing industry, fish farming grounds and other offshore installations. However, debris may also come from land, reaching the sea through surface runoff, streams, rivers and lakes (Hinojosa and Thiel, 2009; WSPA, 2012).

Animals become entangled in marine litter, preventing them from swimming, feeding or reproducing (WSPA, 2012), as debris has been located on major shipping routes and may travel long distances. Hinojosa and Thiel (2009) cited the main negative impacts of marine debris on animals as entanglement, ingestion and transport of associated fauna. Debris may also be mistaken by animals for food and therefore be ingested, or carried away for feeding their young. Debris drifting on the water may provide an opportunity for certain species to hide from large predators or even travel to territories where they are not native.

The environmental problem has driven legislation for protecting the seas and the ecosystem. The Marpol 73/78 international convention has forbidden the dumping of waste, oil and exhaust pollution from ships, which has minimized pollution at sea. However, this is still not enough to control marine debris. For instance, Styrofoam may still be found floating in abundance in water environments, having mostly originated in fish farming facilities, together with bottles, plastic bags, and other types of debris (Hinojosa and Thiel, 2009). Several countries have become interested in the issue and are monitoring their shorelines and registering the findings. Martins and Sobral (2011) found debris on beaches containing persistent organic pollutants (POPs). Thompson *et al.*, (2004), and Moore (2008) associated the adsorption of POPs with chemical transfers into animals' body structure.

The Great Pacific Garbage Patch, estimated to be the largest in the world, has forced the international community to discuss possible options for minimizing the problem. For example, the Declaration of the Global Association for Solutions on Marine Litter (2012) focuses on six main projects for educating the population, conducting more research, working on public policies, sharing best practices, working on plastic recycling and recovery programs, and controlling the "plastic life-cycle process".

Another key issue is legal standards for incorporating plastic into cosmetics. Previously, Gregory (1996) drew attention to the impact of micro-beads in hand cleansers, which have now re-

placed most natural exfoliates. The problem was measured in the Austrian Danube River as part of a two-year research project conducted from 2010 to 2012, in which Lechner *et al.,* (2014) found larger numbers of plastic micro-particles than drifting larval fish. The authors have identified 79.4% of industrial raw materials among the plastic debris in the sample, and estimate that 4.2 t per day enter the Black Sea through the Danube.

Studying divers' behavior in regard to plastic use and food waste production is linked to solid waste management practices (López-Mosquera and Sánchez, 2012). Municipal solid waste is a potential focus of marine debris when associated with poor management practices (Hinojosa and Thiel, 2009) and littering water-bodies, which affects marine ecosystems. The use of technology for waste management benefits civilization and is designed to provide healthier conditions in local surroundings. However, the natural environment does not always have the capacity to respond to this impact . Daily waste production demands a convenient form of regulation and active participation from the population (Bortoleto *et al.,* 2012).

Understanding divers' attitude towards behavior

From a social point of view, Fishbein and Ajzen (1975) proposed the TRA (Theory of Reasoned Action) to measure the relationship between behavioral intention and attitude regarding certain behaviors and subjective norms to which people are conditioned. Attitude is commonly accepted as a variable for explaining or influencing behavior; although, it cannot be measured directly.

In the Theory of Planned Behavior (TPB), Ajzen (1991) describes verbal attitudes and clear actions where "attitude and behavior are compatible in terms of their action, target and context and time elements" (Ajzen, 2012: 445). A specific behavior may be measured through four actions: divers may reduce waste (action) by bringing fewer plastic products (target) into their household (context) for example over the next two months (time). However, general attitude is not compatible with all actions, since attitude merely identifies the target, yet lacks the remaining actions and is responsible for a weak link between general attitudes and specific behaviors. Performing a single behavior does not necessarily mean that it is a standard, daily action. Overall attitude applies to a certain target "generalizing across actions, context and time elements" (Ajzen, 2012: 445).

If, for example, divers use a shopping list, attitude toward the behavior means the degree to which performance of good practices for waste management in the household is positively or negatively valued. Attitude toward behavior is determined by a person's evaluation of the consequence of his behavior and how using such a list influences his decision to behave.

The Declaration of the Global Plastics Association for Solutions on Marine Litter (Marine Litter Solutions, 2012) shows that there is obviously a need to reduce plastic-related items in everyday jobs. In November 2013, a Round Table for the discussion of the current problem caused by macro or micro sized marine litter was held in Berlin (Altvater, 2013), and in January 2014, in France, the International Workshop examined fate and impacts of microplastics on marine ecosystems (see Micro, 2014), thereby proving the importance the scientific community gives to finding solutions and proposing alternatives for a sustainable decision-making process.

In view of these actions, and on the basis of the results obtained from a study for understanding household behavior for reducing waste (Mota, 2014), the objective of this paper is to:

1. Describe scuba divers' household behavior for plastic use and food waste production.
2. Compare scuba divers' with non-divers regarding household practices for reducing marine debris.

Nowadays, since food often comes in plastic containers and wrapping, food production has a major impact on the environment, which sometimes goes unmeasured. This packaging is designed to be practical and meet hygiene standards, although good practices in the household in regard to the environment (Schwab *et al.,* 2014) are needed to minimize waste. Attitude measures the degree to which the performance of good practices (Besharat and Pourbohlool, 2014) regarding household waste management is positively or negatively valued (López-Mosquera and Sánchez, 2012).

Methods

The measurement tool

A questionnaire was drawn up to study behaviors regarding plastic and food discards in divers' households using a set of questions for providing input for each variable in the study taken from several scientific documents (see Kaiser *et al.,* 2003; 15, 16; Bortoleto *et al.,* 2012: 2198, 2199; Rodríguez-Barreiro *et al.,* 2012: 8; Gunders, 2012; Miao and Wei, 2013: 106), and studies on ecological behaviors, waste prevention, environmental impacts and pro-environmental behavior. For food discard-related questions, Gunders's (2012) report proved to be a useful reference for researching relevant items, and had previously been used by scientists. Kaiser *et al.* (2003) referred to the vital need to study pollution levels, and save energy and resources, despite the fact that environmen-

tal psychologists had conducted little research on this issue. This paper contributed important questions to add to the measurement tool, by describing household behavior and environmental awareness. Bortoleto *et al.* (2012) developed a model for household waste prevention, suitable for use as a tool for governance, outlining waste reduction measures.

Divers and non-divers' household behavior (HB) in regard to plastic use and food waste production was measured using statements to describe behavior[1] ranked on a Likert-type scale 0 to 4, arranged from least favorable to most favorable within a certain rank, with unfavorable answers always tending to occupy the lower rank (Gliem and Gliem, 2003). The tool was designed for various groups of divers, and thus register the typical attitudes of:

1. certified divers on a diving holiday;
2. divers with previous certification, yet pursuing further diving education;
3. participants enrolled in a scuba diving course;
4. non-certified divers participating in a "one-day experience" with a diving instructor, which might entail try dives, discovering scuba diving or resort diving.

The study compared student divers who have not been exposed to scuba diving before, and certified divers, paying particular attention to those taking further diving courses. With student divers, there is a possibility they will exhibit similar behavior to certified divers, although they will always lack sufficient diving experience to drive behavioral change.

Finding the target population

According to Thehe Organisation for Economic Co-operation and Development's (OECD) last available report, the United States (U.S.) is the country that creates the most municipal solid waste (msw), with an annual average of 720 kg per capita (OECD, 2013). Thus, for a quantitative study in Mexico, the target population is U.S. divers. Furthermore, as regards cross-border movements, 5,941,914 U.S. citizens visited the country in 2012 (SIOM, 2013).

[1] The following statements were used to study divers' household behavior: 4.1. I buy things that are produced with as little packaging as possible; 4.2. I use my own bag when going shopping, rather than one provided by the shop; 4.3. I buy fruit and vegetables without package; 4.4. I compost my kitchen waste; 4.5. When shopping, I assess the type of packaging and choose one that is recyclable; 4.6. I purchase organic food; 4.7. I purchase bio-degradable products; 4.8. I look for ways to reuse things; 4.9. I recycle recyclable materials such newspapers, cans or bottles; 4.10. For shopping, I prefer paper to plastic bags; 4.11. I buy seasonal produce.

Procedure

Prior to the survey, a pilot test was conducted on 16 certified divers and 8 students to ensure that the survey was easy to understand, highlight any problems that emerged and modify questions if necessary. The measurement tool uses numeric variables for registering typical information from quantitative variables, which measure quantitative values and there may also be categorical variables describing certain characteristics such as 'What is your certification level?' or 'What part of the country do you live in?' which constitutes a non-numeric number, but is a characteristic of a data unit. However, for the purpose of this paper, the analysis of HB was performed using basic statistic analysis, the mean, median, mode, standard deviation being percentile 25, 50 and 75.

Out a list of 56 diving schools, data collection took place with divers using the services of only nine professional training schools on the island of Cozumel, Mexico. All the schools were invited to participate in the study, but in many cases, diving operators were not interested in participating in the study, or company rules stated that private data such as email addresses, name, or postcode could not be recorded for the study. From the February 5 until the April 7, 2013, a total of 181 surveys were administered to U.S. divers with a minimum age of 18 as the target group. The sample guarantees a statistic with 95% confidence, with a 10% sampling error associated with an unknown population size (Bhattacherjee, 2012). Valledor and Carreira (2000) accept this margin of error, adapting the distribution of the population sampled to certified divers and students (non-divers participating in try dives or who have taken most of the certification courses).

Results

The HB variable used several statements whereby 181 U.S. participants were able to rate each one based on a Likert-type scale. The Cronbach's alpha for testing the 11 statements selected was 0.783, suggesting that the statements and respective Likert-type scale are acceptable for measuring divers' household behavior.

The comparison between the whole population of U.S. divers, diving students and certified divers, given on Table 1, reveals the differences between the two groups. The overall sample describes the actual behavior of the participants without distinction, while the group of certified divers provides the typical behavior of divers regarding waste management practices in their household. The 181 participants included 99 certified divers and 100 students, with 18 of them already certified but taking try dives, or continuing education programs.

The overall means are between 1.53 and 3.08 points, accounting for 64% of the lower ranks of the scale (0,1, and 2), where standard deviation is also low (0.855 to 1.278), indicating how compact the sample is, in comparison with the mean value. The observations are not too spread out or distant from the mean values. Moreover, the median and the modal values range from 1 to 4 points, representing 50% of the behavior "2 - I sometimes do it" and the extreme value "4 - I always do it", with the exception of point 1 on the scale "I never do it", registered in statements 4.2 and 4.4. Overall 25% of the general population only performs the behavior sometimes or never does it; 50% of participants have better behavior, but may also do it always for statement 4.9. The remaining 25% have good overall performance for good environmental practices, demonstrating good behavior quite often or always.

Statement "4.1 - I buy things that are produced with as little packaging as possible"

An analysis ofthe distribution of diving students shows thatthe mean is 1.99 points with the peak at point 2 of the scale, while the majority of the values are concentrated around the mean. The modal value is 2, indicating that "doing it sometimes" is the most frequent behavior. The percentile 25 indicates that 25% of student divers never perform the action, while the percentile 50 also indicates that divers "never do it", or perhaps "do it sometimes", but 25% of diving students often buy "things that are produced with as little packaging as possible".

The typical behavior used for comparison is drawn from observations of certified divers, who show a mean of 2.66 for statement 4.1, and a median, modal, and percentile 50 of 3 points, indicating an accurate frequency in adopting the behavior.

An overall comparison shows that divers tend to have different practices regarding "buying things that are produced with as little packaging as possible"; values describing the modal, median, and percentile 50 of the population in the study indicate that divers adopt the behavior sometimes with the exception of certified divers who often perform statement 4.1. Percentile 25 indicates divers in general, and certified divers sometimes perform statement 4.1, with the exception of student divers who never do sot. For the whole population, and sub-populations, 25% of the divers do so often, or always buy things produced with as little packaging as possible, as described by percentile 75.

Table 1: Statistics for the variable HB comparing U.S. divers (n = 181), U.S. diving students (n = 100), and U.S. certified divers (n = 99)

	Sample	4.1	4.2	4.3	4.4	4.5	4.6	4.7	4.8	4.9	4.10	4.11
Mean	All	2.28	2.03	2.98	1.53	1.88	2.21	2.36	2.8	3.08	2.33	2.94
	Stud.	1.99	1.69	2.90	1.53	1.71	2.14	2.17	2.63	3.00	2.10	2.86
	Cert.	2.66	2.39	3.08	1.56	2.09	2.33	2.62	3.01	3.27	2.59	3.07
Median	All	2	2	3	1	2	2	2	3	4	2	3
	Stud.	2	1	3	1	2	2	2	3	3	2	3
	Cert.	3	3	3	1	2	2	3	3	4	3	3
Mode	All	2	1	3	1	2	2	2	3	4	2	3
	Stud.	2	1	3	1	2	2	2	3	4	2	3
	Cert.	3	3	3	1	2	2	3	3	4	4	3
Std. Deviation	All	0.972	1.195	0.888	1.103	0.89	0.972	0.855	0.915	1.125	1.278	0.867
	Stud.	1.000	1.125	0.893	1.049	0.913	1.025	0.888	0.971	1.110	1.235	0.995
	Cert.	0.785	1.168	0.865	1.18	0.858	0.958	0.738	0.802	1.077	1.286	0.689
Percentile 25	All	2	1	3	1	1	2	2	2	2	1	2
	Stud.	1	1	2	1	1	1	2	2	2	1	2
	Cert.	2	1	3	1	2	2	2	2	3	2	3
Percentile 50	All	2	2	3	1	2	2	2	3	4	2	3
	Stud.	2	1	3	1	2	2	2	3	3	2	3
	Cert.	3	3	3	1	2	2	3	3	4	3	3
Percentile 75	All	3	3	4	2	2	3	3	3	4	3	4
	Stud.	3	3	4	2	2	3	3	3	4	3	4
	Cert.	3	3	4	2	3	3	3	4	4	4	4

Scale: 0 – I don't know; 1 – I never do it; 2 – I do it sometimes; 3 – I do it often; 4 – I do it always. Source: The author.

Statement "4.2 –I use my own bag when going shopping, rather than one provided by the shop"

Diving students display different behavior since their mean value on the rating scale is much lower (1.69), and the median and modal values are also low. The distribution is well spread out, showing a standard deviation of 1.125, but with a high peak for students only sometimes performing the behavior . Percentiles 25 and 50 register student divers as never adopting the practice measured, although 25% of students display an opposite position by often "using their own bag when going shopping, rather than one provided by the shop".

The typical conduct of certified divers indicates high values for engaging in this behavior. The mean value is 2.39 and the median and modal value is 3, indicating that certified divers often "use their own bag when going shopping, rather than the one provided by the shop", while 75% of the sub-population also behaves in the same way or does so always.

An overall comparison shows differences in the median and modal numbers, particularly as regards the attitude in item 4.2, and doing so often. Percentile 25 indicates that 25% of divers never do so, or did not know how to respond, but also that 25% of the population in the study do so often or always "use their own bag when going shopping, rather than one provided by the shop", as described by percentile 75.

Statement "4.3 – I buy fruit and vegetables without packaging"

The overall sample of U.S. divers has a high number of participants answering above the mean value of 2.98, and a median and modal value of 3 on the scale. Both groups have registered 50% doing so often. All the samples engage in very similar behavior, in other words, divers "often buy fruit and vegetables without packaging", while 25% of participants do so always as indicated by percentile 75.

Statement "4.4 – I compost my kitchen waste"

The statement has its peak at point 1 of the scale, indicating the low frequency for adopting the behavior, and is on the left side of the mean value. A total of 75% of divers never compost their kitchen waste, as their mean is around 1.53 points, the median, mode, percentiles 25 and 50 are represented by point 1 of the scale, and percentile 75 indicates that 25% of divers compost their kitchen waste sometimes, often or even always. As regards kitchen waste, all divers (students and certified) registered very similar behavior.

Statement "4.5 – When shopping, I assess the type of packaging and choose one that is recyclable"

The sub-populations in the study have a mean ranging from 1.71 to 2.09, while the median, and modal value indicates the same type of behavior. Percentile 25 of student divers never "assess the type of packaging or choose one that is recyclable", in comparison with certified divers who do so sometimes. Moreover, 50% of divers do so often, with the exception of certified divers who always "assess the type of packaging and choose one that is recyclable" in percentile 75.

Statement "4.6 – I purchase organic food"

Mean values are very similar, ranging from 2.14 to 2.33 points of the scale, while median and modal values are also around 2 points, with divers sometimes purchasing organic food. The samples are not that far from the mean value, as standard deviations range from 0.958 to 1.025 points, where percentile 25 also indicates the same type of behavior with the exception of student divers who never purchase organic food. Percentile 50 already indicates that divers sometimes have this behavior, while the remaining 25% of the population in the study buys it often or always, as indicated by percentile 75.

Statement "4.7 – I purchase bio-degradable products"

The majority of the observations are at the midpoint of the scale, and the median and modal value represents points 2 and 3 of the scale, where divers sometimes purchase bio-degradable products, or do so often. Samples are concentrated around the mean, as standard deviation is represented by values ranging from 0.738 to 0.888, while percentile 25 indicates that divers do not perform the behavior, or only sometimes. Fifty percent of divers only do so sometimes, with the exception of certified divers who reported doing so often, while 25% divers did so often or always, as in percentile 75.

Statement "4.8 – I look for ways to reuse things"

In statement 4.8, the mean values vary from 2.63 to 3.01, but their median and modal values represent 3 points on the scale, where divers often "look for ways to reuse things". Percentile 25 indicates 25% of divers adopt the behavior only sometimes or never, while percentiles 50 and 75 have divers "looking for ways to reuse things" sometimes, or quite often, with the exception of certified divers in percentile 75 where 25% do so always.

Statement "4.9 – I recycle recyclable materials such as newspaper, cans or bottles"

In statement 4.9, mean values are very similar, ranging from 3.00 to 3.27, with a median value of 4 points for divers always performing this behavior, with the exception of student divers, who only do so often. The observations tend to be well spread around the mean values, ranging from 1.077 to 1.125, as indicated by the standard deviation, but having some discrepancies when divided through the percentile.

Twenty-five percent of the population only sometimes "recycle recyclable materials such as newspaper, cans or bottles", as in percentile 25, except for certified divers who do so often. Percentiles 50 and 75 indicate that divers often adopt the behavior, or always, with the exception of percentile 50 where student divers only do so often.

Statement "4.10 – For shopping, I prefer paper bags to plastic ones"

Statement 4.10 has a mean value ranging from 2.10 to 2.59 and a median and modal value of 2 for diving students. Certified divers have a median of 3 points on the scale, and a modal number on the scale of 4, meaning that they always adopt this attitude. The observations are well spread from the mean values, giving a standard deviation from 1.235 to 1.286, also yielding different percentiles. For shopping, 25% of diving students do not know, or never "prefer paper bags to plastic ones", while already certified divers sometimes prefer paper bags. In percentile 50 only certified divers sometimes, pr often, prefer paper bags to plastic ones, whereas diving students only do so sometimes. Also for shopping, 25% of divers always prefer paper bags to plastic ones, but student divers only do so sometimes.

Statement "4.11 – I buy seasonal produce"

For statement 4.11, where mean values range from 2.86 to 3.07, and median and modal values are situated on point 3 of the scale, all observations are quite close to the mean values, having standard deviation ranging from 0.689 to 0.995, and only percentile 25 is different among the sub-populations; only sometimes do 25% of divers "buy seasonal produce" with the exception of certified divers, who do so often, as indicated by percentile 25.

Percentile 50 has similar behavior regarding divers "often buying seasonal produce", while percentile 75 indicates 25% of the divers always adopting the same practice.

Discussion

Using the sample for participants from the U.S., the statements selected were tested with Cronbach's alpha and the value situated between 7.00 and 9.50, as recommended by George and Mallery (2003), which is reliable for measuring household behavior. As stated before, there is a noticeable difference between diving students and certified divers with higher-scaled behaviors. Although scuba diving studies mostly focus on the direct impacts on the ecosystem (Jennings, 2007; Garrod and Gössling, 2008), underwater comfort (Dimock, 2009) and behavior (Musa *et al.*, 2011; Ong and Musa, 2012), this original study highlights the plausible difference for household behavior to reduce pollution. It is based on the incentive found in the activity and increased awareness of environmental impacts. Certified divers reveal optimistic behavior (Orams, 1996, 1999) probably as a result of being more exposed to information and the facts of water pollution by plastic. They are therefore more likely to learn through educational actions (Garrod and Gössling, 2008) and experiences with wildlife encounters, which are thought to raise environmental awareness linked to sustainable attitudes and actions with a long-term effect on living patterns (Ballantyne *et al.,* 2011). Certified divers tend to act differently and express more favorable judgments regarding their household behavior (Bortoleto *et al.,* 2012).

Following the extension of Ajzen's (1991, 2012) theory, the TPB, there are no ways to measure divers' and non-divers' attitudes other than by observed behavior and consistency. Moreover, in this study, behavior was studied as a multi-part of the feeling and desire to continue engaging in certain behaviors (Besharat and Pourbohlool, 2014) in the divers' households, or even taking into account convictions and prejudices (Schwab *et al.,* 2014) from actions based on diver' experience. Certified divers display a role-model profile, while diving students, being widely represented by non-certified divers, were classified as citizens who were not influenced by scuba diving. Having certified divers as a reference for typical divers' behavior has proved to be always higher than students in regard to the mean value for their HB. Furthermore, the finding matches Viscusi *et al.* (2011: 1)'s study, in which from a representative sample of U.S. household behaviors for plastic recycling, it was concluded that "individual behaviors that benefit the environment are potentially influenced by personal values regarding environmental quality, social norms that encourage pro-environmental actions and economic incentives".

However, diving students also demonstrated a good commitment to environmental practices specifically for statement 4.9 for recycling recyclable materials such as newspapers, cans, or bottles recording the mean value "3 – I do so often", and almost the same scale value for statements 4.3 and 4.11 to buy fruit and vegetables without packaging, and buy seasonal produce. In these same statements, certified divers have always registered grade 3 in their answers. When com-

paring behavior for composting kitchen waste, both groups demonstrated a low level of activity, although certified divers were seen to be more active at the top of the scale.

This study is a representation of scuba divers on Cozumel Island, where most divers visiting the island (SIOM, 2013) and taking part in diving activities are from the United States. Through the use of this nature-based activity (Ballantyne *et al.,* 2011; Orams, 1996, 1999)positive statements describing standard actions related with the consumption of goods, certified divers were profiled for a typical household behavior regarding plastic use and food waste production. Certified divers always reported a higher-scaled mind-setcompared with diving students, establishing a clear difference in behavior. The higher the rating a behavior scores on a positive scale, the more useful it is as a predictor for reducing plastic and food waste.

The silent threat called marine debris can only be tackled from the source if consumers are aware of the impact it has on the environment (Micro, 2014). Pollution within specific ranges, and not only macro but also micro-sizes (Lechner *et al.,* 2014; Gregory, 1996) has become a major concern for the global community.

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