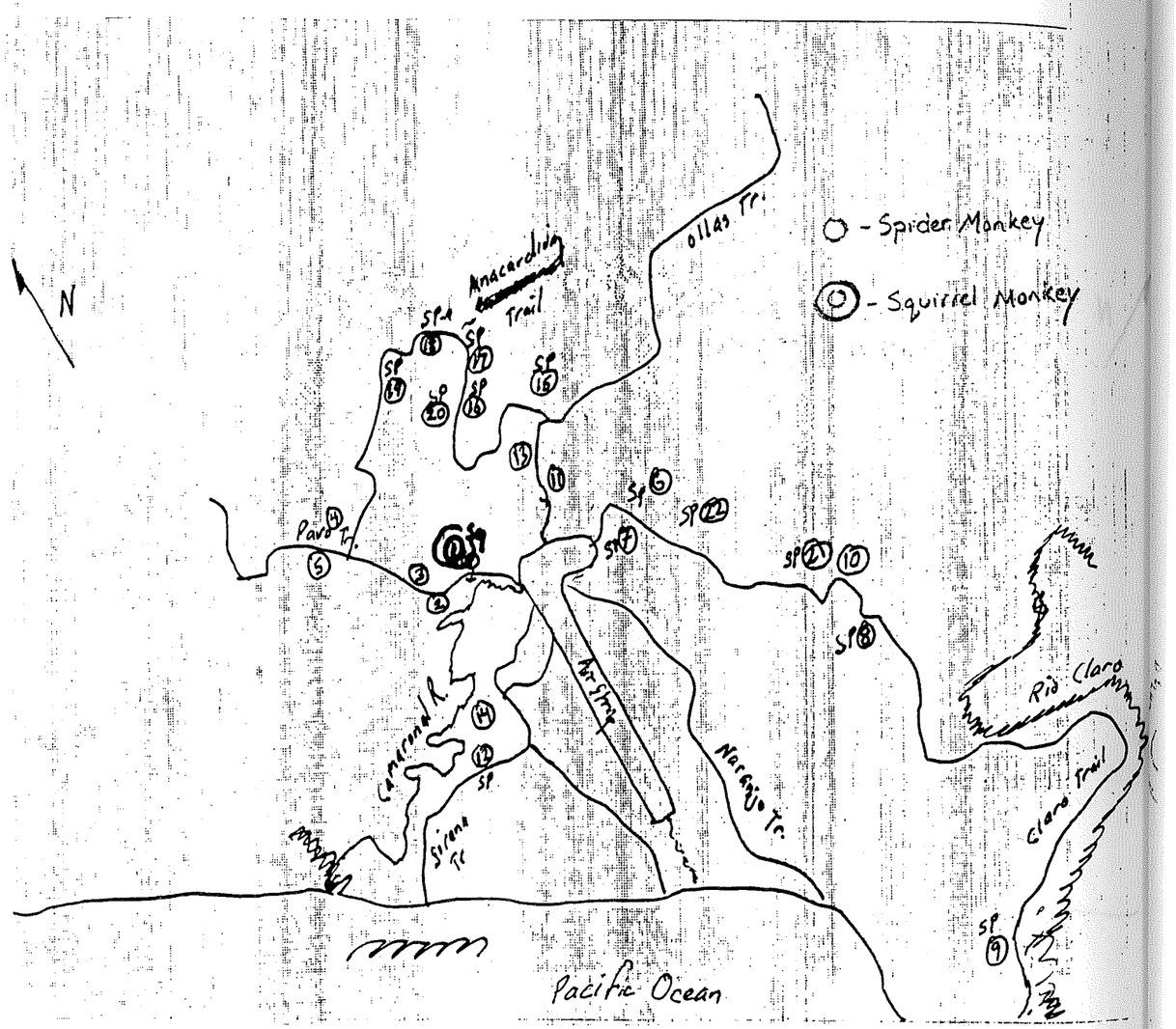
Figure 2 Sitings of Spider Monkeys and Squirrel Monkeys as ordered in Table 3 and Table 4, respecitvely. Sampling occurred near Sirena Station, Corcovado, Costa Rica, on January 24, 1991.



PHOTOTAXIS AND FEEDING ADAPTATIONS IN CASSIOPEA XAMACHANA

Dan Gavin, Christine Goodale

We studied the phototactic and feeding adaptations in Cassiopea xamachana medusa. C. xamachana is a cnidarian with zooxanthellae, a symbiotic algae, and it has the ability to select an appropriate environment. We found that an upside down settled medusa that is exposing its oral arms to full light is more likely to move when ambient light is reduced by 250 times with an opaque cover than when a translucent cover is placed over it. In an aquarium, we found that an unsettled medusa will always choose light over shade when given the choice. The medusa did not choose a substrate with high reflectivity significantly more than a substrate with lower reflectivity, although high ambient light conditions occurred throughout the aquarium during this experiment.

Observations on the morphology of C. xamachana were made. The water flow around a pulsating, settled medusa was found to efficiently pull water beneath the dorsal surface and thrust it through the lappets on the oral arms and may circulate it through the arms several times. Mucus secretions which immobilize and clump zooplankton were found to create a toxic microenvironment around the medusa. Sea water exposed to a pulsing medusa killed five times more A. salina than unexposed sea water. We predict that the pulsing behavior and the secretion of the mucus substantially increases the zooplankton intake. Speculations were also made about the distribution and habitat selection by the medusa.

SUBSTRATE PREFERENCE AND TERRITORIAL RESOURCE PARTITIONING WITHIN A GUILD OF DAMSELFISH

Ann Schrot, Gregory York

Our study focused on interspecific territorial resource partitioning along a gradient of topographical complexity within a damselfish guild. Bicolour damselfish occupy territories of significantly lower topographical complexity compared to three-spot and dusky damselfish. Three-spot and dusky damselfish occupy territories of topographical complexities which are not significantly different. We concluded that neither Gause's Competitive Exclusion Principle nor Sale's Lottery Model alone satisfactorily explains high diversity within the guild, but that some aspects of these apparently mutually exclusive models may apply.

FEEDING AND TERRITORIAL BEHAVIOR IN CLEANING GOBIES

Abby Bergholtz, Geoff Kunz

This study investigates the behavior of gobies (Gobiosoma sp.) at cleaning stations. We compared the number and diversity of host fish that visited cleaning stations occupied by one, two, and seven gobies. We found that the seven goby station attracted significantly more hosts than both the one and two goby stations, though the diversity of host species did not vary significantly. Comparing the amount of time a goby spent cleaning each host, we found that a goby at the seven goby station spent significantly less time cleaning each host than a goby at a one or two goby station. This inverse relationship between number of hosts and time a goby spent cleaning each host explains our next finding, that there is no significant difference in the average feeding level between stations. Gobies at the seven goby station cleaned more hosts than the gobies at the one and two goby stations, but they were not able to spend as much time cleaning each host.

We also found evidence of territoriality among gobies at multiple goby stations. Gobies on the sides of a coral head feed significantly less than gobies on the top of the head. We concluded that these gobies are forced to accept inferior feeding positions because they are excluded by other gobies from the prime locations on the top surface of the coral heads.

DIURNAL BEHAVIOR OF THE NOCTURNAL SQUIRREL FISH (HOLOCENTUS RUFUS)

Greg Goldfarb, Lisa Taboada, Vijay Vaswani

Squirrel fish (Holocentrus rufus), though nocturnal, are observed exposed outside their shelters during the day. We looked at the abundance of exposed squirrel fish during the day and night, but found no significant differences in abundance. We feel, though, that there are more exposed fish at night that were not observed by us due to fish migrations to feed.

To examine the costs and benefits of diurnal exposure, we looked at squirrel fish behavior during the day. We found that when water turbidity was low, the fish spent significantly more time exposed, and ventured to significantly further distances from their shelters, than when turbidity was high. This may be due to a decreased energy cost of staying stationary or swimming in calm versus turbid waters. We found no significant correlation between the length of the fish and the time it spent exposed, or the distance it ventured from its shelter.

We feel that some of the advantages of diurnal exposure are opportunistic feeding, territory defense, and the opportunity to be cleaned. Costs include the risk of predation and energy to remain stationary or to swim.

PREFERENCES AND ASSOCIATIONS OF OPHIOTHRIX SUENSONII WITH THREE SPECIES OF SPONGES: HALICLONA RUBENS, HALICLONA HOGARTHI, AND IOTROCHOTA BIROTULATA

Todd Gorman, Tara Grabowsky, Ashley Mattoon

This study investigated several aspects of the associations between Ophiothrix suensonii and three species of sponge: Haliclona rubens, H. hogarthi, and Iotrochota birolata. In the field, O. suensonii was observed to inhabit these three species of sponge in different frequencies. A larger number of O. suensonii were found on H. rubens than on H. hogarthi or I. birolata. A substrate selection experiment in the lab, however revealed no preference among the O. suensonii for a particular type of sponge, thus indicating that the number of brittle stars found on a sponge in the field may reflect differential survival of brittle stars rather than a substrate preference. Studies in the field and lab showed that O. suensonii preferred networks of branched sponges to nonbranched, single stalked sponges. This suggests that O. suensonii may prefer sponges that offer them a greater degree of protection. The presence of another O. suensonii individual was not proven to be a cue to attract other O. suensonii individuals to a sponge. A significant trend in the associations of light colored O. suensonii with light colored sponges and dark colored O. suensonii with dark colored sponges was apparent. Predation studies examining the possible defense mechanism of this color crypsis revealed that color matching did provide protection for the brittle stars. However, further study is needed to substantiate this conclusion. Overall, our results seemed to indicate that O. suensonii is more likely to inhabit sponges which provide them with protection through complex branching networks and color associations.

THE PRESENCE OF PRIOR PARROTFISH BITES ON THALASSIA TESTUDINUM IS NOT A SECONDARY CUE

Jon Kohl

In contrast to the findings of Gorman and Kohl (1991), the presence of prior parrotfish bites is not used by parrotfish species as a cue secondary to epiphitic growth when foraging on Thalassia testudinum. One of the two sites where the study was conducted accumulated no bites in the experimental blades. One possible explanation is larger fish that might bite the blades school together and away from T. testudinum beds where the replicates were set up.

DOCUMENTATION OF THE TRIPNEUSTES VENTRICOSUS INVASION INTO THE FOREREEF AND ITS POSSIBLE EFFECTS ON COMMUNITY (OR "MOVE OVER BUD, THERE'S A NEW KID IN TOWN")

Eddie Gilmartin, Todd Young

Through urchin surveys and algae surveys on the west fore reef due south of mooring one at the Discovery Bay Marine Lab, Jamaica, we achieved the following:

We have documented that Tripneustes ventricosus has colonized the fore reef within the last two years for the first time in the history of the marine lab. T. ventricosus seem to have colonized only after the 1983 die off of Diadema antillarum, which have still not recovered to previous population densities. T. ventricosus and D. antillarum seem to have a negative effect on fleshy algae cover. Fleshy algae cover has decreased in the last two to five years, which seems related to increased urchin densities, primarily T. ventricosus.

We also suggest several mechanisms by which T. ventricosus might have been excluded from the fore reef by D. antillarum, and why it has taken so long for T. ventricosus to colonize the fore reef.