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Measuring life history characteristics and effects of disturbance on the American oystercatcher (*Haematopus palliatus*) on the upper Texas Coast

Amanda Anderson
University of Houston-Clear Lake

Dr. George Guillen
Dr. Susan Heath

Acknowledgements:

Environmental Institute of Houston
Gulf Coast Bird Observatory
All the volunteers



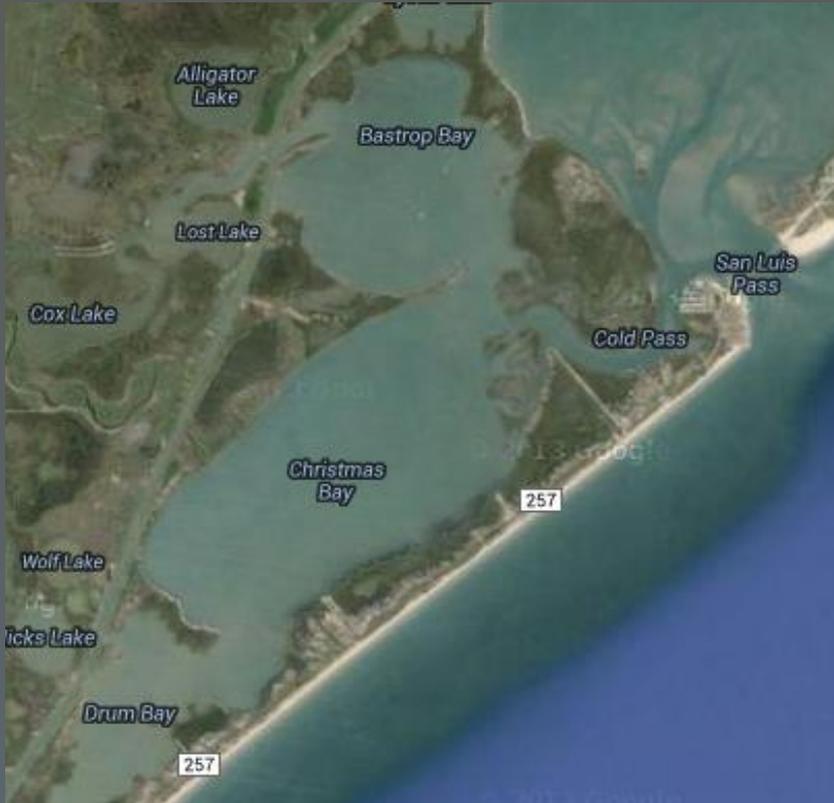
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Environmental Institute of Houston,
National Fish and Wildlife Federation, and
Conoco Phillips.

Research Objectives

Examine how laughing gulls (*Larus atricilla*) affect parental behavior, including incubation and nest success.



Study Sites

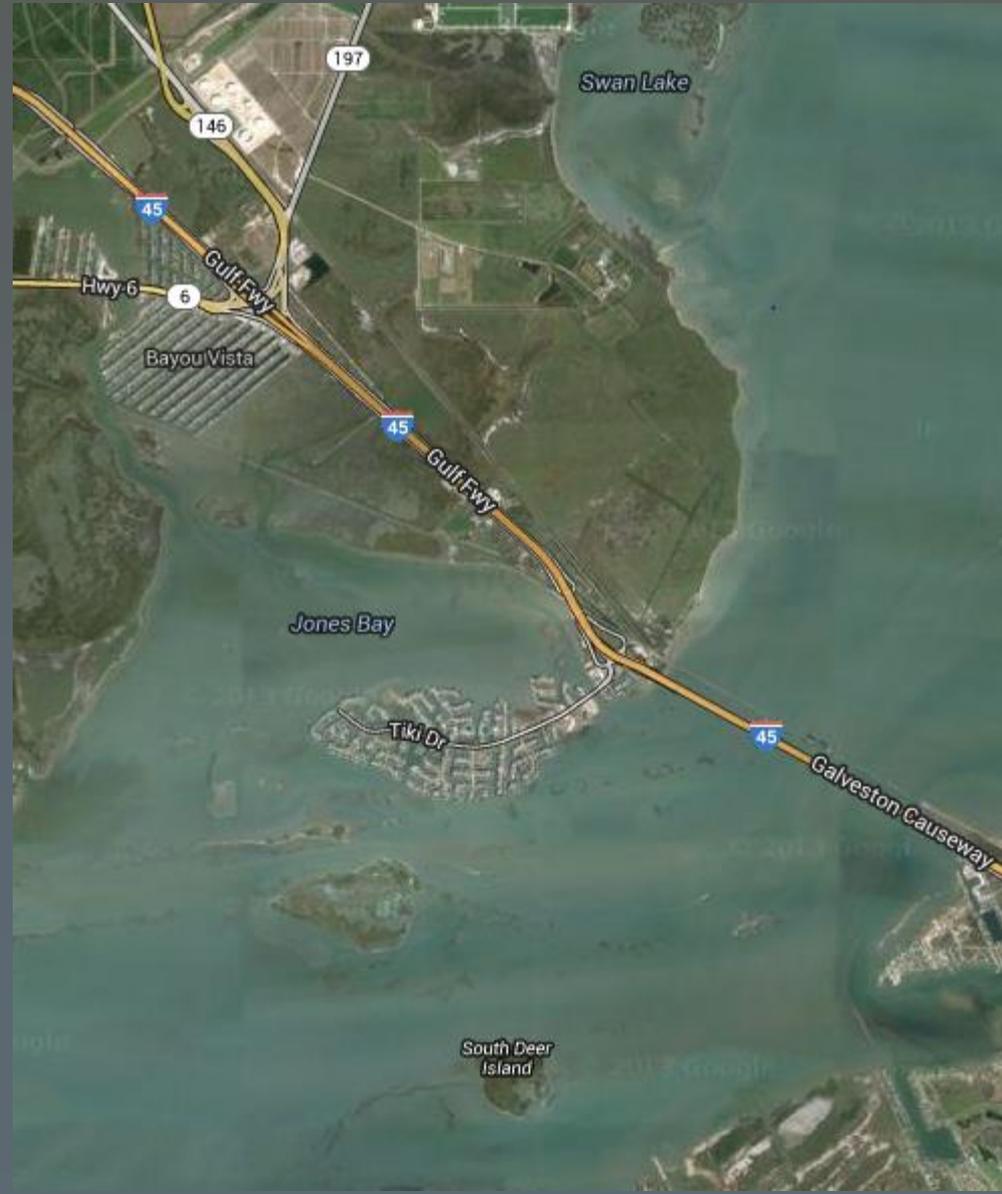


West Galveston Bay

Swan Lake

Bastrop Bay

Drum Bay



West Galveston Bay

Swan Lake

Bastrop Bay

Drum Bay

Methods

- Conducted time activity budgets (TAB)
 - Focal observations of pairs during the incubation and chick rearing periods
 - 20 minute periods and observations every 15 seconds
 - 3 time blocks: 8-10:30, 10:30-13:00, 13:00-15:30
 - Ended observations when the adult went out of sight > 5 minutes
 - Attempted to observe both adults simultaneously or consecutively
- Identified likely cause for behaviors: LAGU, AMOY, other bird spp., humans, observer
- Events: noteworthy behaviors that occurred in between observations.
 - e.g. Prey capture, chick feeding, agonistic, chick guarding

Methods

- Attempted to complete TABs on as many nests as possible and all those with chicks.
 - Difficult to randomize sampling
 - Logistical and time constraints
- Inventory of LAGU: An estimated count and not assessing population size but only presence/absence and distribution
 - Counted individuals within our estimated areal extent of AMOY nesting territory.
 - Counted at lay, hatch and during each TAB
- Identified the presence or absence of LAGU colonies and whether nesting
 - Identified active colonies- LAGU nests' confirmed during AMOY nests' checks
 - Colony: Large aggregation of breeding birds at a common nesting site for a specific period of time

Methods

Evaluated the influence of multiple variables on the proportion of time spent per behavioral category for all individuals

Variables

- Absence or presence of LAGU colony
- No hatch or nest hatched
- No fledge or fledged chick
- Gull counts

Behavioral Categories

1. Self Maintenance: stretching, bill dipping, bathing, preening, roosting
2. Incubation: incubating-roosting, incubating-vigilant, shading eggs
3. Forage: searching, probing, handling
4. Vigilant: standing-vigilant, laying-vigilant
5. Locomotion: flying, walking, running
6. Agonistic: agonistic, fly-agonistic, walk-agonistic, run-agonistic
7. Standing and laying
8. Chick feeding

Results

Incubation

Nests(n)= 32

TAB(n)= 125

14 nests with no LAGU colonies

18 nests with LAGU colonies

Chick Rearing

Nests(n)= 22

TAB(n)= 104

13 nests with no LAGU colonies

9 nests with LAGU colonies



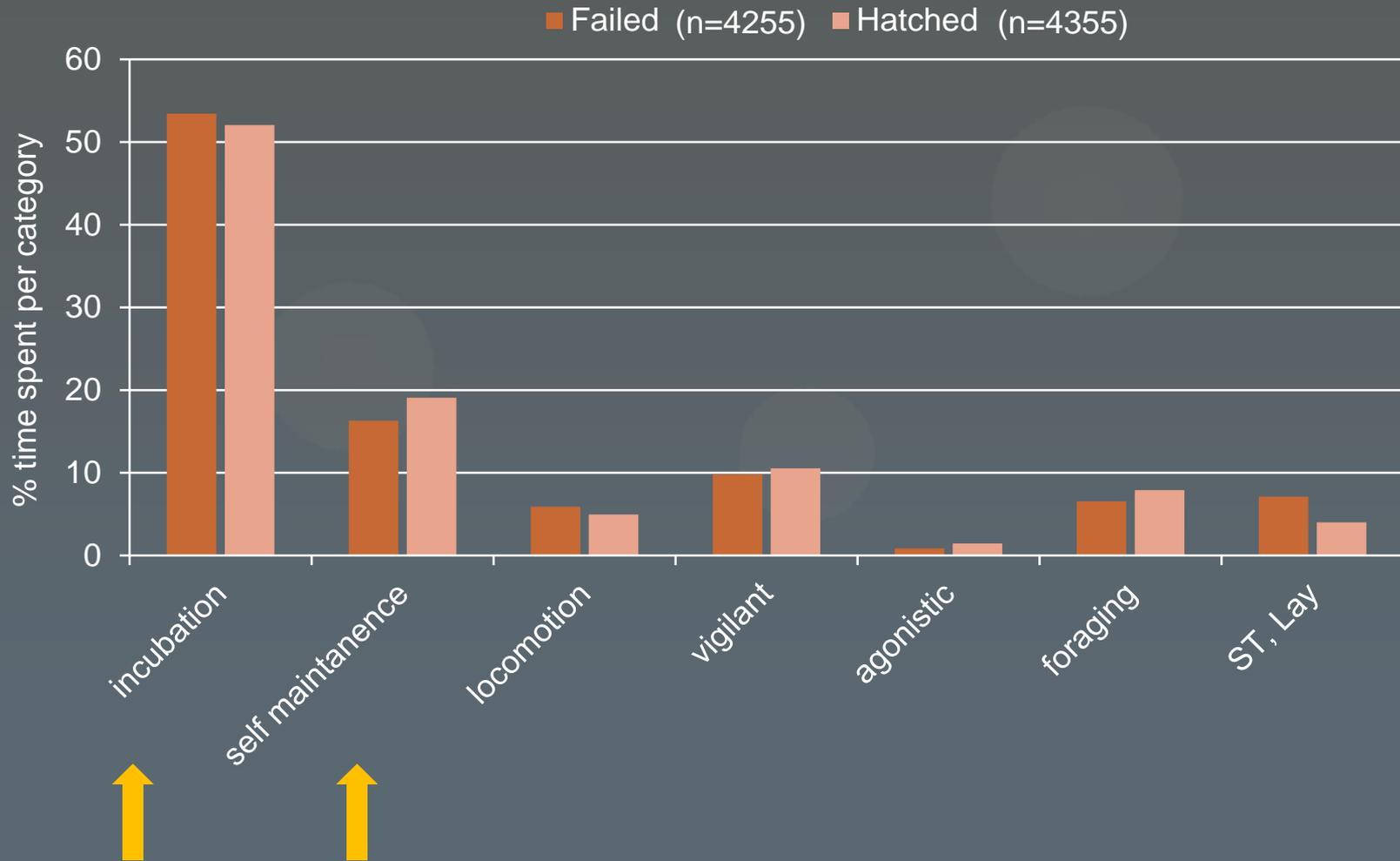
Incubation Period

Behavior	Abbrev.	F
incubating-vigilant	IV	3304
standing-vigilant	STV	817
roosting	R	758
preening	PR	726
shading eggs	SE	624
incubating-roosting	IR	532
standing	ST	477
walking	W	379
searching	S	343
probing	P	232
incubating	I	86
flying	FLY	69
agonistic	A	65
laying-vigilant	LAYV	59
handling food	H	48
flying-agonistic	FLYA	21
running	RUN	19
stretching	SR	15
bathing	BATH	14
run-agonistic	RUNA	13
bill dip	BD	12

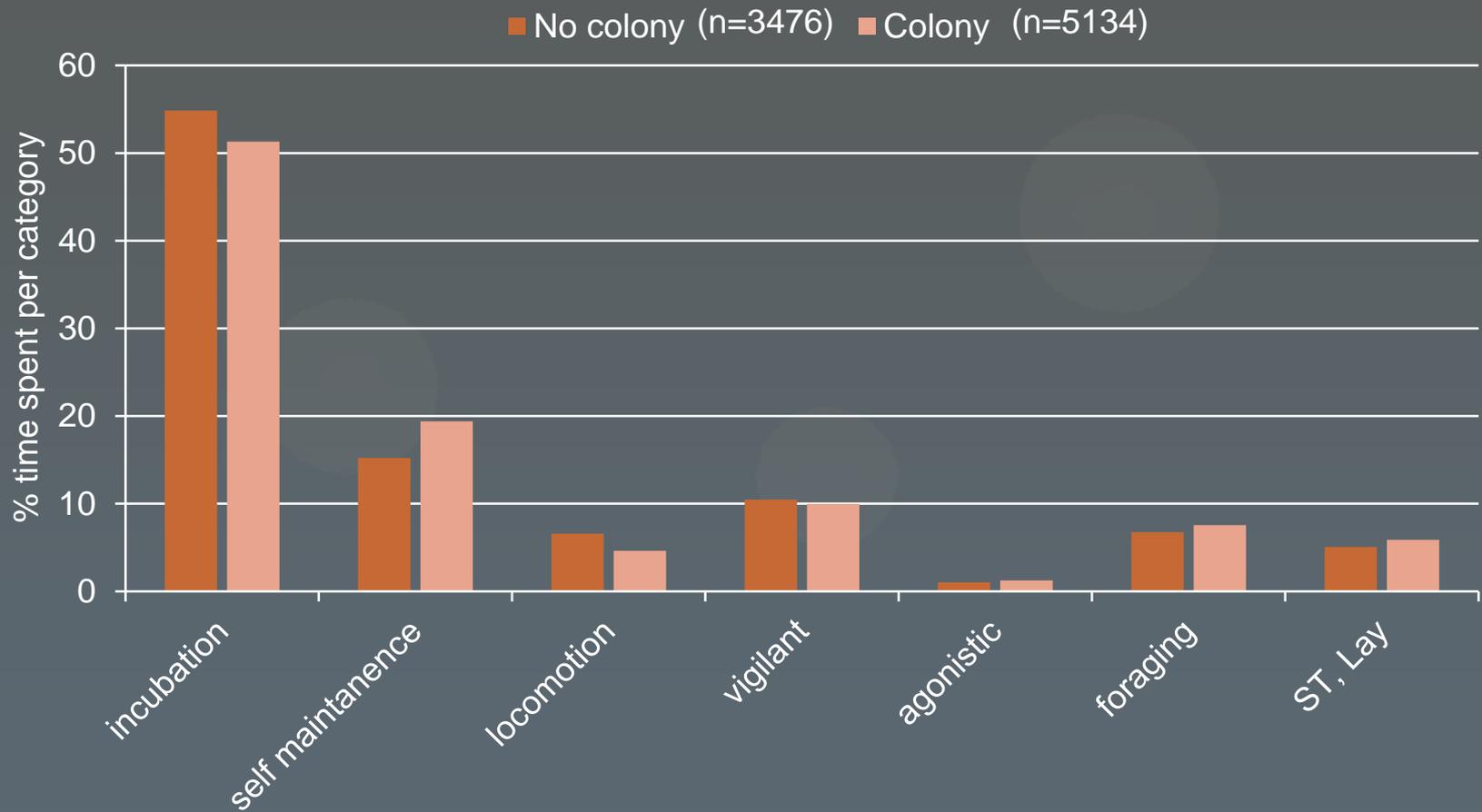
Chick Rearing Period

Behavior	Abbrev.	F
standing-vigilant	STV	2448
roosting	R	2129
preening	PR	532
standing	ST	478
searching	S	399
walking	W	339
laying-vigilant	LAYV	323
probing	P	225
brooding	B	201
laying	LAY	162
handling food	H	90
agonistic	A	60
flying	FLY	50
chick feeding	CF	45
bathing	BATH	32
flying-agonistic	FLYA	30
running	RUN	12

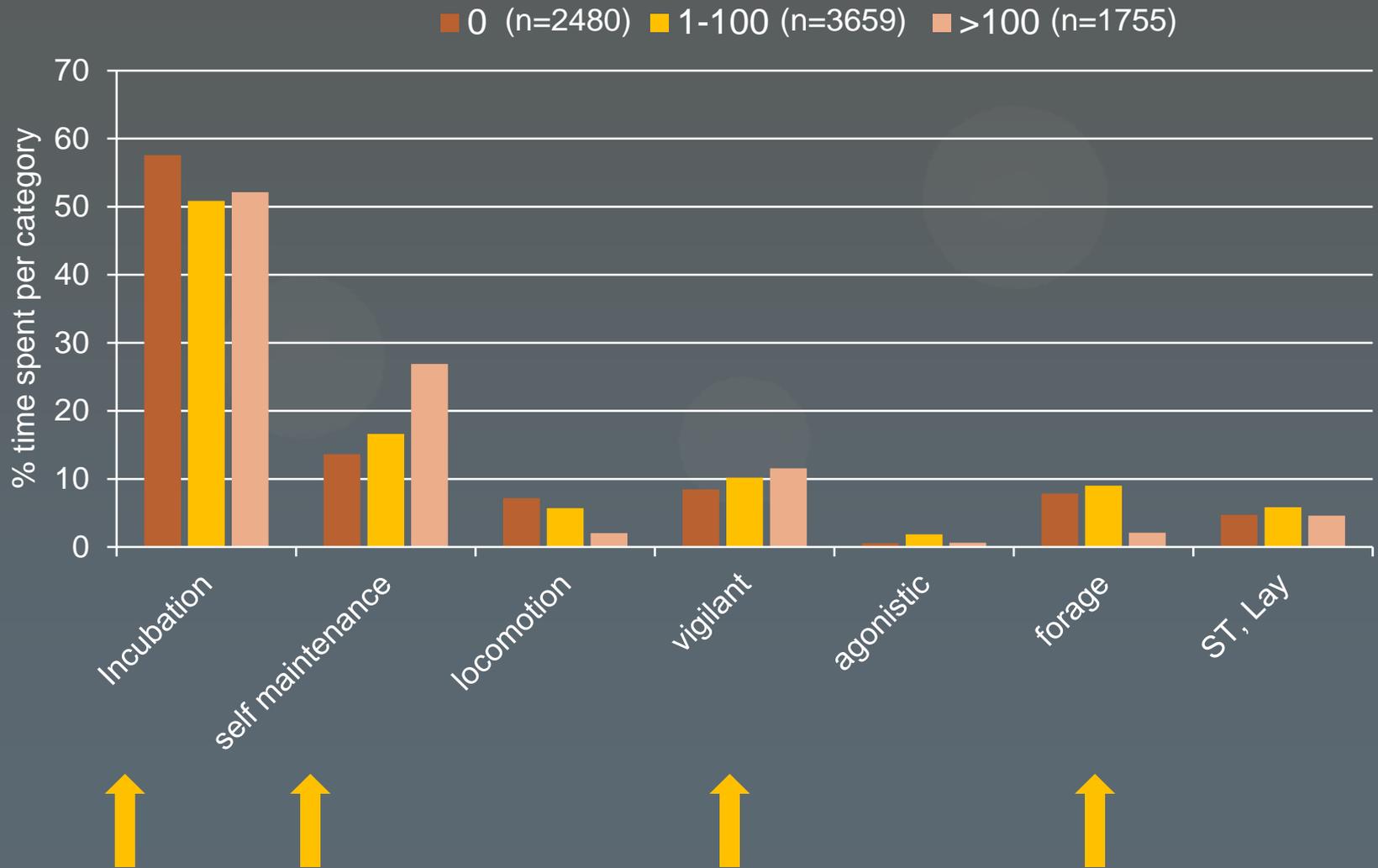
Behavior during Incubation Period vs. Nest Fate



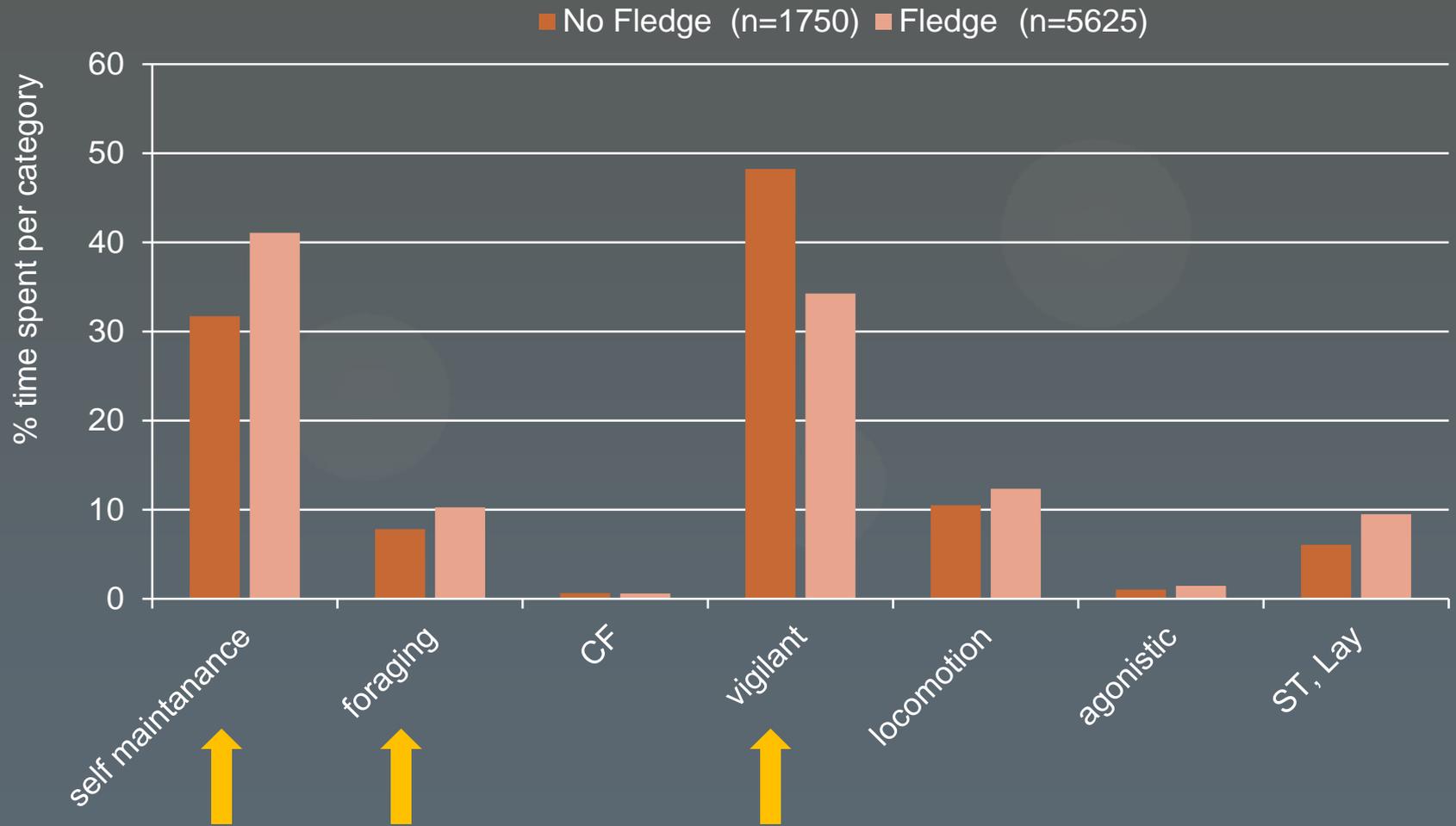
Behavior during Incubation Period vs. Presence of Gull Colonies



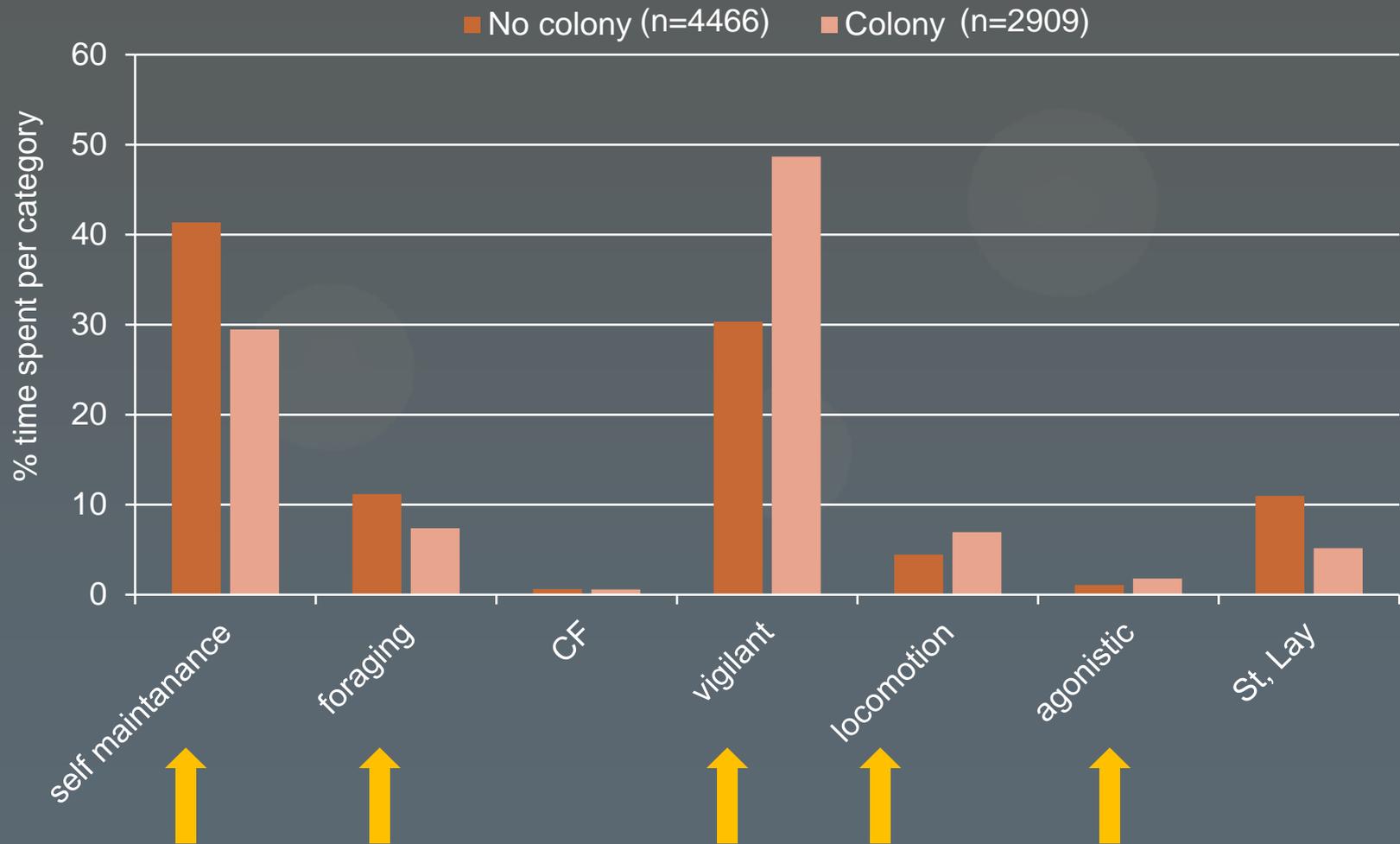
Behavior during Incubation Period vs. Gull Numbers



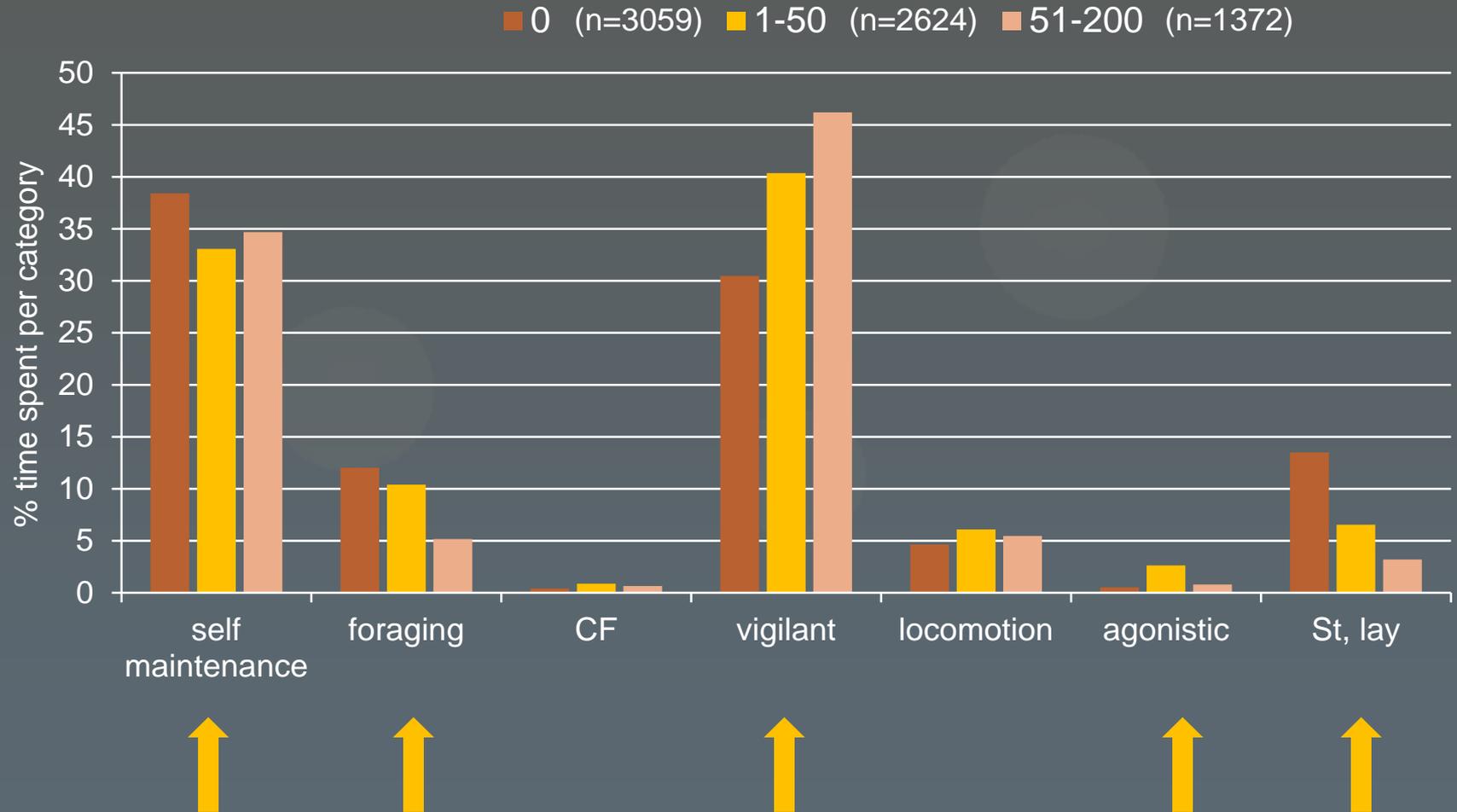
Behavior during Chick Rearing Period vs. Chick Fate



Behavior during Chick rearing vs. the Presence of Gull Colonies

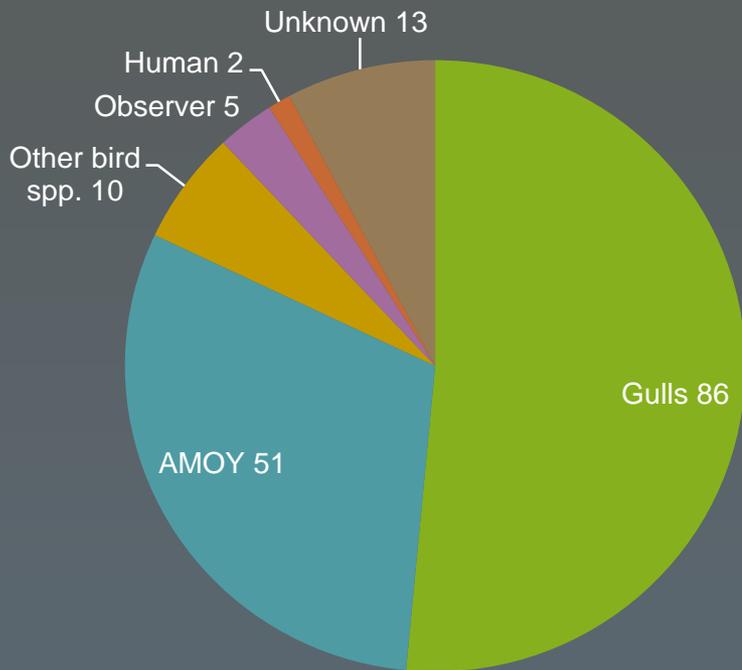


Behavior during Chick rearing vs. Gull Numbers

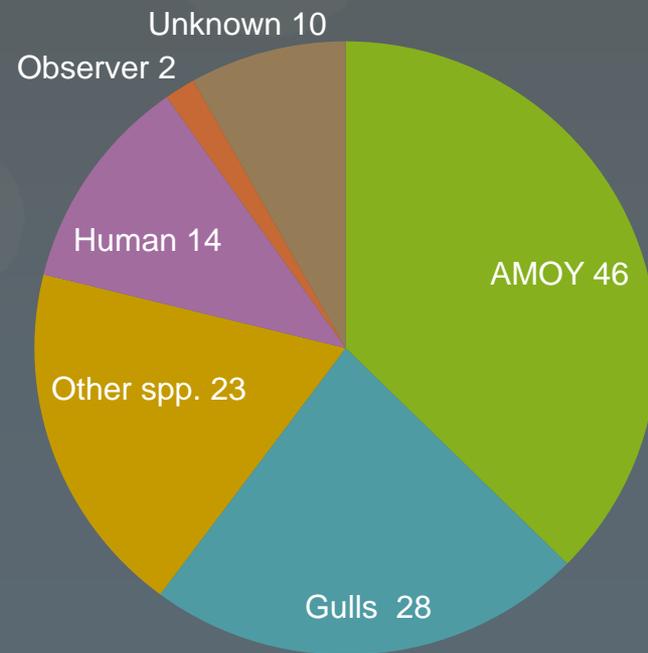


Frequency of listed factors that resulted in agonistic behaviors

Incubation



Chick rearing



Anecdotes

- Weather
 - February to March: Several northerly storms, but greater reef exposure
 - May to June: Several storm events and little reef exposure
- 1 adult always seemed to be on chick duty
- Observed several instances of sibling rivalry or dominance during feeding
- Agonistic towards GBHE, RUTU, TRHE, and a LAGU chick
- Kleptoparasitism by FOTE and LAGU



Hanson Nature Photography

Discussion and Conclusions

- During incubation, adults exhibited greater self maintenance in presence of gull colonies and greater gull numbers.
- Inverse relationship between foraging and >100 gulls during incubation.
- Pairs that fledged a chick spent more time foraging and self maintenance.
- Pairs that did not fledge a chick were more vigilant.
- Positive relationship between vigilant, agonistic, and locomotive behaviors and presence of gull colony and more gulls.
- Positive relationship between incubation, foraging, and self maintenance (chick rearing) and absence of gull colony and no gulls.

Discussion and Conclusions

I predict there are several other factors influencing behaviors during the incubation period and whether pairs fledge a chick

- Parental attendance and performance
 - Total nest and chick attendance – time non incubating adult spends in NT and time spent by both parents during chick rearing.
 - Response to stressors
- Nesting and feeding territory
 - Adjacent or connected vs. distant reef
 - Nest and chick concealment
- Behaviors
 - Foraging Behavior
 - Length of foraging bouts and capture rates
 - Influenced by reef exposure
 - Vigilant, agonistic, locomotion
 - Also influenced by AMOY and other bird spp.

Future Work Planned

- Work in progress and welcome input!
 - Additional monitoring will be conducted during 2014 breeding season
 - Conducting monthly surveys during non breeding season
 - Fine tuning protocols
- Future statistical analyses (univariate and multivariate) will be conducted to evaluate the cumulative and interactive affects of various stressors, and behavioral and environmental factors on fledging success.
 - E.g. abiotic factors, disturbances, interspecific and intraspecific interactions.

Questions or Comments?

