Nyhetsbrev 2010-12-20

Året som gått

Under sommaren 2010 fortsatte studierna i den konstgjorda häckningshyllan för sillgrisslor som uppfördes under hösten 2008. Det blir mer och mer tydligt att hyllan är ett bra ställe att studera de häckande fåglarna ostört. Under sommaren har sillgrisslorna fortsatt att etablera sig på hyllan och i år har vi haft sju häckande par på hyllan jämfört med förra årets säsong då ett par gjorde ett häckningsförsök. Av dessa lyckades fem par med häckningen – vilket inom forskningen definieras som att ungen var minst 15 dagar gammal när den försvann. Då anses ungarna vara tillräckligt stora för att klara hoppet från hyllan och kunna följa med sin pappa ut till havs. En av dessa ungar, som också hade två märkta föräldrar, ringmärktes nere på stranden, vilket innebär att vi nu har börjat samla information från en hel familj med hjälp av den konstgjorda häckningshyllan. Under 2011 planerar vi att fortsätta utveckla studierna på hyllan genom att utveckla automatiska vågar där fåglarnas vikt kan registreras dagligen under häckningssäsongen.

Under 2009 utrustades sillgrisslor med ljusloggers, s.k. geolocators, som med hjälp av mätningar av dagslängden kan användas för att beräkna vart fåglarna befunnit sig. Två av de utrustade individerna återfångades under 2010 och data från dessa har nu kunnat analyseras. Detta har bidragit med information om kärnområden för fåglarna under ruggning och den tid då hannarna tar hand om ungarna till havs, under vintern samt inför och under häckningssäsongen.

Även under 2010 har vi ringmärkt 3000 sillgrissleungar vilket har engagerat många frivilliga att hjälpa till. Media har varit intresserade av ringmärkningen i år. SVT- produktionen ”Mitt i naturen” deltog under ett par kvällar vilket resulterade i ett program om sillgrisslor, ett program som fick mycket positiv kritik.

En utökning av konstgjorda häckplatser för tordmular genomfördes genom att holkar byggdes och placerades ut på sydvästra delen av ön under våren 2010. Med hjälp av dessa kunde ett antal tordmular utrustas med GPS-loggers och djupmätare vilka har kunnat bidra med information om hur tordmularna födosöker. Vi har t.ex. observerat att tordmularna inte dyker lika djupt som sillgrisslorna när de fiskar.

Under hösten deltog Jonas Hentati Sundberg och Martina Kadin i den första internationella havsfågelkonferensen som hölls i Kanada. De presenterade två posters, se nedan, om projektets forskning varav den ena fick ett hedersomnämnande.

A distinct pattern for maturation in Common murres is influenced by condition as chick

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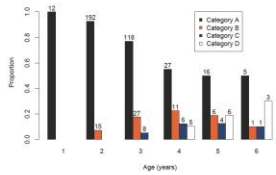
- Development of behavior during colony visits and maturation followed a clear pattern
- Early maturing individuals were lighter at fledging than birds with normal maturity
- One-year-olds observed, typically on rocks in the water adjacent to the colony

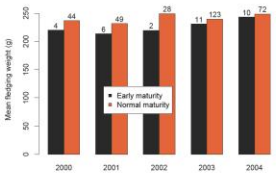
Maturation rate and age at first breeding reflects a trade-off between lifetime reproduction and survival. Delayed breeding and colony visits prior to breeding are common features of seabirds' life histories. These are associated with experience and knowledge acquisition that, if adaptive, increase lifetime reproductive output. In parallel behavior and social skills necessary for finding a partner and breeding site develop. Rate of maturation is typically linked to age and sex, but have been suggested to be positively influenced by conditions experienced as chick.

Common murres *Uria aalge* have been studied when returning to their natal colony Stora Karlsö in the Baltic Sea since 2002. Individually identifiable birds have been observed at selected breeding ledges and rocks in the water 'clubs', resulting in records of more than 1000 individuals.



2-year-olds were the most frequently observed at breeding ledges, possibly due to high return rates and mobility between ledges. Some 2-year-olds repeatedly visited a single ledge, but this behavior was more common for older birds. Pair bonds were first seen among 3-year-olds and the first breeding attempts occurred at age four.

Categorisation of behavior of individuals within one breeding season
A. Observed occasionally at breeding ledges.
B. More permanent presence on one breeding ledge (at least 3-4 times, corrected for frequency of observations). Accepted by breeding birds. Occasional social interactions but no indication of pair-bond formation.
C. As B., and in addition, observed with a potential mate and showing behavior indicating pair-bonding, e.g. grooming and copulations (observations clearly suggest that the pair-bond is stable). Often mimicking adult behavior such as brooding and feeding.
D. Breeding, i.e. egg or chick observed.

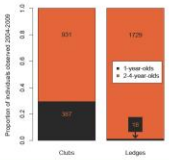


Contrary to expectations, murres defined as "early maturity"-individuals were lighter at fledging than birds defined as "normal maturity"-individuals. For normal or high quality birds, delayed breeding would be adaptive as life expectancy is long for murres. Assuming that a lower fledging weight indicates low quality, for these individuals the situation will be different if their intrinsic quality reduces life expectancy or age-related improve-ments in reproductive performance. Breeding is thus expected at younger ages, as early investments in reproduction are more likely to pay off than saving resources for the future.

If weight is assumed to not reflect individual quality, it is possible that one mechanism e.g. an endocrine function, directly or indirectly regulates both fledging weight and maturation, which will result in the observed relationship. It may also be that fledging weight reflects quality and an endocrine function is the mechanism of selection causing this relationship.

Definition of early and normal maturity
In consistency with the results from the observations at breeding ledges, birds were defined as early maturing individuals or with normal maturity as follows: Guillemots with early maturity are 1-year-olds visiting the breeding ledges (cat. A), 2-years-olds assigned category B, 3-year-olds assigned category C and/or breeding 4- and 5-year-olds. All other birds are regarded as of normal maturity.

1-year-olds were observed at the colony in all years, commonly on clubs and occasionally on breeding ledges. The number and proportion of 1-year-olds visiting the colony varied between years, and complimentary data suggests that this reflects survival rates.



No differences were found between males and females in developing adult behavior.

An innovative Research Lab in the middle of a murre colony

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We have constructed a system of artificial breeding ledges for common murres *Uria aalge*. The construction is located in the middle of the natural murre colony in the island of Stora Karlsö and enables highly detailed studies with limited disturbance. A high fraction of the recruiting birds are of known life history, which will facilitate interpretation of the data collected.

Material and Methods

- All ledges are accessible through openings for observation and instrumentation.
- 1.5 m deep room inside with space for researchers and equipment.
- Ledges are prepared for integration of antennas for PIT-tag readers.
- Automatic balances can be integrated in the ledge surface (pilot study 2011).
- The ledge system is prepared for video surveillance.

Under Construction...

Results

- Since year 2000, over 19000 chicks have been ringed in the colony with steal- and color rings for easy identification. The ambition is for ringed birds with known sex and age to recruit to the new artificial breeding ledges.
- Over 1000 individuals have been re-sighted in the colony since 2002.
- Background data on survival, productivity and diet has been collected since 1997.
- One pair recruited to the ledge in 2009 (first season) and seven pairs in 2010, 30 % of the breeding birds have known life history.

"Hard Facts"

- Height: 11 meters
- Width: 5 meters
- Material: Steal, Oak and Limestone
- Weight: 11 tons
- Total ledge length: 36 meters
- Height above sea level: 40 meters
- Number of pairs (maximum): 600
- Expected life span (ledge system): 30 years
- Total cost (planning and construction): 450 000 Euro

Acknowledgements

- WWF Sweden for funding the project
- Karlsö Jagt- och Djurskyddsförening for providing the land
- Photos on this poster by Baltic Seabird and Aron Hejdström

About...

Baltic Seabird project started 1997 and is led by OO and HÖ. JHS is MSc student in Ecology, coordinated field work 2005-2009 and led the project of constructing the artificial ledge system. MK is a PhD student in Natural Resource Management focussing on seabird-ecosystem interaction in the Baltic Sea.