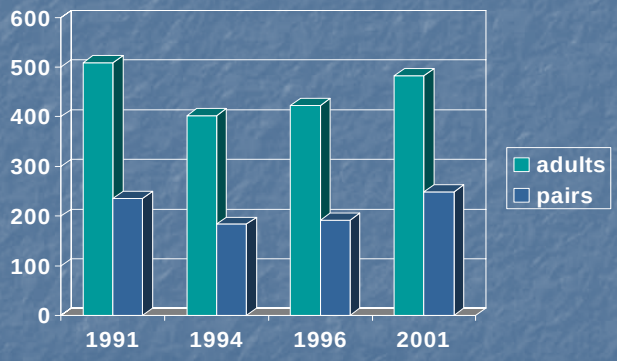
Preliminary results of an Eastern Canada banding study… support for more conservation effort in non-breeding sites

Diane L. Amirault, Canadian Wildlife Service, Sackville, N.B.

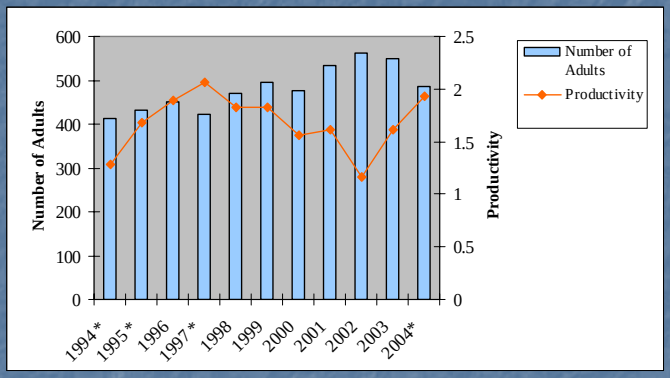
François Shaffer, Krista Baker, Andrew Boyne,
Anna Calvert, Julie McKnight, Peter Thomas

Piping Plover population trends 1991-2001



Recovery goal: 650 adults/325 pairs

Eastern Canada productivity 1994-2004



* - partial population counts. Numbers presented are end of year counts.

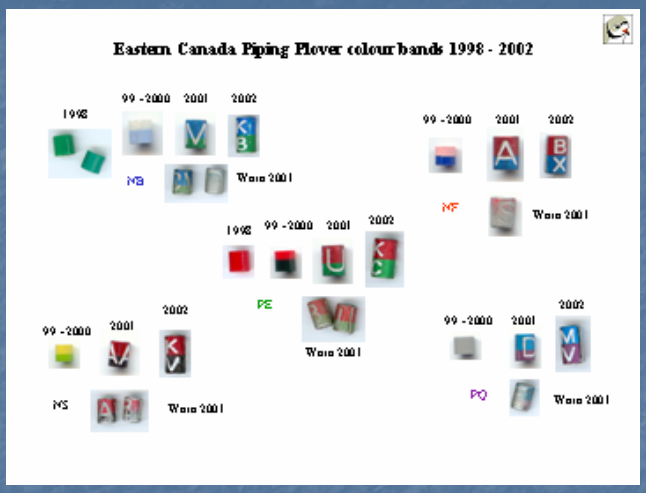
Why a banding study ?

- Are juvenile plovers being recruited into Eastern Canada breeding population ?
- What are the survival rates of Eastern Canadian adult and juvenile Piping Plovers ?
- How do Piping Plovers disperse from natal beaches ?
- Where do Eastern Canada Piping Plovers overwinter ?
- What are their migratory behaviours (timing, location)
- General biology/behaviour questions:
  - Metapopulation dynamics/links to other populations ?
  - Time lag between production of birds and return to first nest ?
  - Other unknown concerns . . .
- *Some of the key information required for conducting PVA, setting recovery goals is missing*

Methods

- Protocol developed to minimize disturbance and potential for leg injury . . .
- Banding scheme:
  - 2 bands placed on both adults and juveniles
  - 1 band placed per leg, both on lower leg
  - 1 metal USGS band (Incoloy) and 1 colour band specific to each province
  - Adults: metal USGS band on right leg, colour band on left leg
  - Juveniles: metal USGS band on left leg, colour band on right leg

Modified Weller Trap



RESULTS
Banding and Recaptures

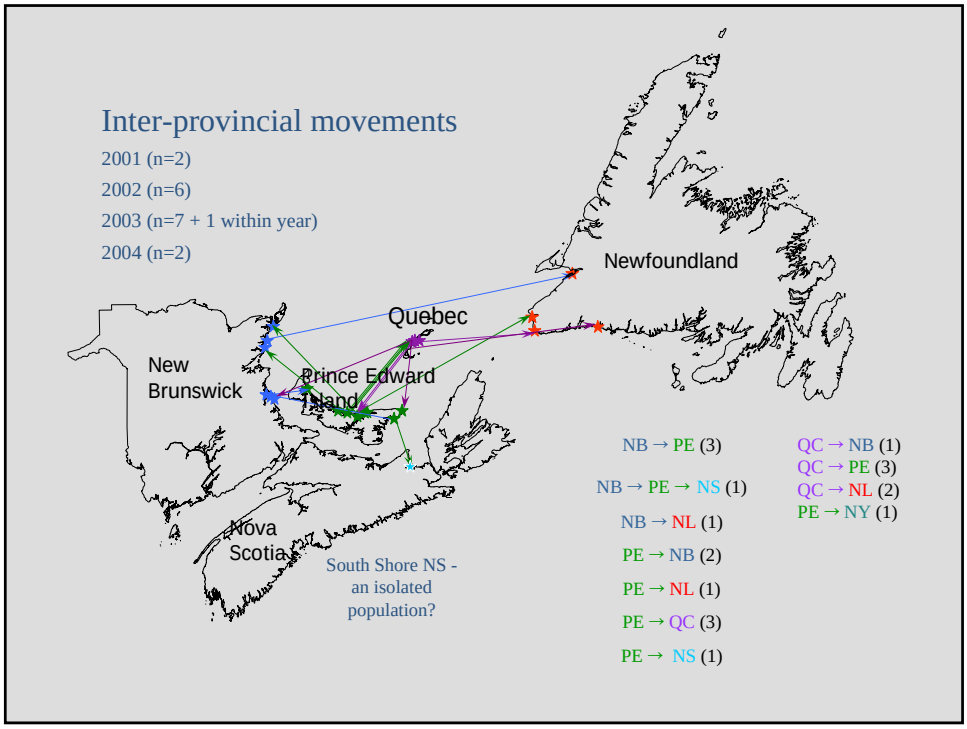
- Total number banded: 888 – 561 young; 327 adults
  - 255 in NB; 209 in NS; 180 in PEI; 157 in QC; 87 in NL
- Total number recaptured: 176 recaptures in Atlantic Canada (101 adults and 75 chicks)

Recruitment

- Juvenile Piping Plovers returned to Eastern Canada to nest with only one exception - one PEI bird nested in NY in 2003 (MA in 2004)
- Total individuals banded as chicks recaptured in subsequent years: 75 (13% banded)
- Most nest the year after production. There does not appear to be a significant lag to return for nesting. Age at first nesting:
  - 45 in second year
  - 22 in third year
  - 7 in fourth year
  - 1 in fifth year

Dispersal and movements

- Most young birds return to their province of origin (86.7%); a lower proportion returned to PEI (54.5%), compared to NB (93.3%), NS (100%), NL (100%)
- Few young birds return to the beach where they were produced (6.7%)
- Most adults exhibit high nest site fidelity (71.1%), however some have moved considerable distances – even between provinces (4)!
- Movements between all Gulf of St Lawrence provinces, but not to or from southern Nova Scotia
- No dispersal from NL to other provinces during study



Metapopulation dynamics

- Southern NS apparently reproductively isolated from other areas in Canada and US.
- One movement with PEI-northern NS to Pomquet Beach area.

Survival rate calculations

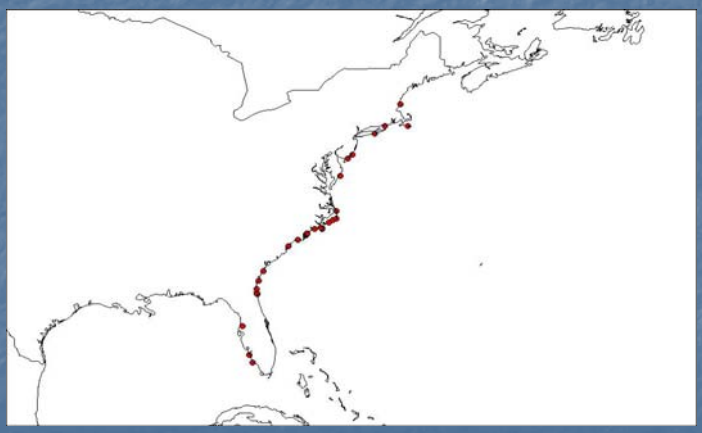
- From Anna Calvert's analysis . . .
  - Southern NS survival rates (v. slow growth or stability)
    - adults = 73.2%
    - juveniles = 32.8%
  - Gulf population survival rates (decline of approx 4% per year)
    - adults = 73.3%
    - juveniles = 23.9%
  - Comparison to US Atlantic adult survival = 74%; juvenile survival = 48%
  - *Model identifies adult survival as the most important factor fueling population changes !*

Increase productivity target...

- Lower than anticipated juvenile survival rates – require higher productivity for population recovery
- New recommendation from modeling exercise:
  - 1.65 chicks fledged/pair required for population increase

Migration observations

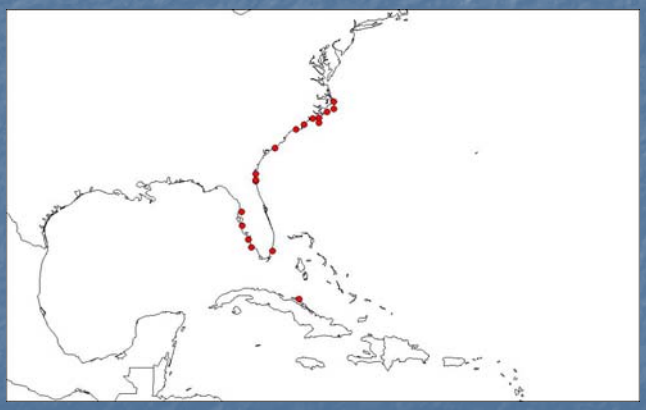
(July-Oct; Mar-Apr)



Migration

- Main migration areas identified: Massachusetts, New Jersey, New York, North Carolina, Florida
- Leave for migration early – early July have been seen in migration
- May be present in Eastern Canada for as little as 3 months

Wintering observations
(Nov-Feb)



Wintering grounds

- Main wintering areas identified: North Carolina, Georgia, Florida, also Bahamas, Cuba
- Many wintering areas identified as critical habitat under US ESA
- Observations on the wintering grounds provide evidence of high site fidelity within and between years
- BUT . . .

Observer effort ?

- Location of wintering and migration areas may reflect observer effort rather than solely area of occurrence

Nesting parameter investigations

- Productivity of adults and first time nesters:
  - No apparent correlation between age and nesting success but more data for second and third year birds than for older birds (known age birds)
- Mate retention:
  - Of 112 pairs where both individuals were known, only 4 cases were recorded where the pair bond was retained in consecutive years.

Morphometric data

- There are no differences between male and female plovers in mass, tail length, wing chord or culmen length
- There are no differences in mass, tail length, wing chord or culmen length when examining age classes

Other interesting findings . . .

- One case of polyandry
- One case of individual surviving oil incident
- Complexity of habitat use
- Strong role of male in chick rearing

Support for conservation of non-breeding sites…

- Proportion of young birds returning to nest is low, even though productivity is consistently good. Are factors affecting survival during winter or migration to blame?
- Attention to protection of breeding sites only will result in protection for a small proportion of the year
- Winter site fidelity has been demonstrated – we do not know the impact of birds being displaced from traditional wintering sites
- Adult survival is one of the most important factors fueling population trends – must do more to enhance survival of adults!

More to follow . . .

- Analysis of genetic materials to determine affinity of southern NS with the US and the rest of Eastern Canada
- Recapture of marked individuals and removal of colour bands

Acknowledgements

- Piping Plover Recovery Team and Working Group
- Parks Canada
  - Kejimkujik National Park
  - Kouchibouguac National Park
  - Prince Edward Island National Park
- Piper Project
- Island Nature Trust
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- Nova Scotia Department of Natural Resources
- Nova Scotia Guardian Program
- AND winter/migration observers !!!!

THANK YOU !