Leveling the Playing Field: Employing High Technology to Combat Poachers

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Basic Stats

- 30,000 elephants killed in 2012.
- 668 rhinos in just South Africa in 2012.
- 500 rhinos since Jan. 01, 2013 in RSA.
- Tusks = $3500/kg @30kgs/pair= $125,000.
- Rhino =$65,000/kg@7kg = $450,000 each.
- China is main consumer of tusks.
- Vietnam is main consumer of rhino horn.
South Africa
May-June 2013 Flights

• 11 flights including 5 at night at Olifants West.
• Bungee launch and parachute recovery.
• Used both IR and EO cameras.
• Challenge of heavy winds at 35 kts at night.
• Easy to spot animals and humans at night even down to wild dogs and guinea fowl.
• Clear proof of concept.
KEY ISSUES

• How to employ advanced technologies to combat poaching?

• What types of appropriate technologies should be used that is:
  – Exportable – ITAR vs. Commerce
  – Importable – National security vs. civil aviation
  – Affordable
  – Easy to maintain
  – Simple to use and operate in the field.
Operational Use of Drones

• The Falcon UAV for use in Africa
• Currently in use with police in US
• Range of + 10 kms, speed 45 knots,
• Operates at up to 500 meters altitude
• Wing = 2.4 m Length = 1.3m
• Training 1 day plus test flights
• Hand launch with parachute or belly landing
Drone Packages

- Combined EO/IR Gimbal Two-axis Steerable.
- Battery rechargeable in vehicle.
- Autopilot enabled.
- Rally to Home Lost Link
- Assembly = 1 min. with Launch in 5 min.
- Live video feed to control laptop in vehicle.
- Total Weight = 8 - 12 kgs.
- US Commerce Dept. License not ITAR.
LESSONS LEARNED

• Africa is too big to randomly launch UAVs.
• Night flights present greater challenge.
• Mathematical modeling is essential to narrow areas to be monitored.
• Predictive analysis and heuristic modeling can tell when and where to fly.
• Model is able to learn from each flight.
LESSONS LEARNED

• Range of UAV is NOT the critical parameter.
• Focus on how fast and how far rangers be deployed at night for intercept.
• Maximum of no more than 10-12 kms.
• Parachute landings key for night flights.
• Must be proactive with flight plans and ranger deployment from mathematical modeling.
• UAVS are only a tool.
Next Steps

• Given full access to all Kruger data – beginning to model the park.
• Model of Balule Reserve completed.
• Plans to fly in Kruger NP and two reserves in Natal in early 2014.
• Beginning modeling in Tanzania and Kenya in January, 2014/
• Expect to fly those sites first qtr. 2014.
Fear the Turtle